DOCUMENT RESUME

ED 335 535 CE 058 774

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TITLE Evaluation of the Cooperative Demonstration Program (High Technology): First Year Report.

INSTITUTION COSMOS Corp., Washington, DC.
SPONS AGENCY Department of Education, Washington, DC. Office of Planning, Budget, and Evaluation.
PUB DATE Jul 91
CONTRACT LC90006001
NOTE 127p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Continuing Education; *Cost Effectiveness; Curriculum Development; *Demonstration Programs; Disabilities; Disadvantaged; Educational Cooperation; Educational Innovation; Education Work Relationship; Federal Programs; *Grants; Job Training; Labor Force Development; Postsecondary Education; *Program Design; Program Development; *Program Effectiveness; Program Evaluation; Program Implementation; School Business Relationship; *Technological Advancement; Vocational Education
IDENTIFIERS *Cooperative Demonstration Prog (High Technology)

ABSTRACT

Twenty-three projects funded by the Cooperative Demonstration Program (High Technology) in Fiscal Year 1988 were evaluated. The evaluation focused on project logic and design, implementation, and costs and benefits. Thirteen of the 23 applications were found to present clear and coherent design for their projects. Success was predicted for eight projects selected for site visits and then compared with actual success based on numbers of students trained. Clarity and coherence of the application were not a good predictor of success. The success in implementation was measured by the extent to which the project met its goals and objectives regarding student training, partnership development, and curriculum development. Projects emphasized one or more of four different activities, each with different outcomes: direct training services to students, curriculum development, staff development, and curriculum or other dissemination. The lack of innovation within and across projects might have been due to the absence of a priority for it in the regulations or points rewarded for it in the scoring of applications. Five of the eight projects visited were able to implement their proposed plan. For seven of the eight projects, project costs were reasonable in relation to project outcomes. Changes in the study design and procedures were recommended for the second year. (YLB)

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Evaluation of the Cooperative Demonstration Program (High Technology): First Year Report

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July 1991

Prepared for the U.S. Department of Education,
Office of Planning, Budget and Evaluation
under Contract No. LC90006001

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COSMOS CORPORATION

PREFACE

This report summarizes the first year evaluation of the Cooperative Demonstration Program (High Technology). The Program is authorized under Title IV, Part B, Subpart 1 of the Carl Perkins Act of 1984 and is administered by the Office of Vocational and Adult Education. The purpose of the evaluation is to determine the extent to which: 1) the grant applications present a clear and coherent design for a project, 2) the project designs have been successfully implemented; and 3) project costs are reasonable in relation to projected or actual outcomes.

There are three sets of activities that will be conducted during the evaluation: a review of grantee applications for 53 projects funded in FY1988 or FY1989, mail or telephone surveys of 39 of those funded projects, and site visits to 27 of the funded projects. The data collected will be presented in a final report addressing the above evaluation issues. This evaluation is being conducted during the period March 13, 1990 through December 31, 1991.

This document is submitted as Deliverable No. 27 to the U.S. Department of Education, Office of Planning, Budget and Evaluation (OPBE), under Contract No. LC90006001 to COSMOS Corporation. Dr. Sandra Furey, OPBE, serves as the COTR for the contract. The study team would like to gratefully acknowledge the guidance and support provided by Dr. Furey during the study's first year.

The study team consists of staff members from COSMOS Corporation and Westat Corporation. Participating in the evaluation in the first year from COSMOS were: Peter Bateman (project director), Ellen Schiller, June Sivilli, Chris Owner, and Judith Alamprese (corporate reviewer). Participating in the evaluation from Westat (and Decision Resources Corporation) were: Lana Muraskin (deputy project director), Ted Murphy, Allison Henderson, Janie Funkhouser, and Justin Boesel. Three outside experts in the field, Bill Morrill, Gene Bottoms, and Roger Vaughan, are helping to guide the evaluation. The study team would like to especially thank Roger Vaughan and Lynne Adduci for their assistance in editing this report. The report was typed and assembled by Tina Jackson.

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EXECUTIVE SUMMARY

This report summarizes the activities of and the findings from an evaluation of 23 projects funded by the Cooperative Demonstration Program (High Technology) in FY1988. The evaluation answers three questions about the FY1988 projects. First, did the grant applications submitted for funding present a clear and coherent design for the project? Second, were the grantees able to implement their project designs as proposed, and, if not, what problems prevented that implementation? Third, were the costs of the project reasonable relative to projected or actual outcomes from the project? Each of these questions is addressed in a separate section of this report.

The Cooperative Demonstration Program (PL 98-524, Title IV, Part B, Subpart 1) is the largest demonstration effort currently supported under the Carl Perkins Act of 1984. The Program provides the U.S. Department of Education (ED) an opportunity to try new approaches to vocational education and to learn about the effectiveness of those approaches. The funded projects are to reflect the major priorities of the Act: 1) increased access to high quality programs for special populations (disadvantaged and handicapped); 2) improvement of the transition from school to work for all students; and 3) possibility of replication (Federal Register, 1988). The projects also are to demonstrate successful cooperation between the private sector and public agencies to impart advanced vocational education skills through a variety of models, e.g., work experience and apprenticeship, worksite training, placement, and public works.

Of the 181 applications submitted in the first year of the Program (FY1988), 36 applications were approved and were given grants ranging from $50,000 to $550,000. The winning projects were notified in October 1988 and began operating as early as December 1988. Although operating in calendar year 1989 and 1990, the first cohort of projects are considered FY1988 projects because the funding was appropriated in the FY1988 budget. The second cohort of projects (a total of 30) was funded from FY1989 funds and operated in 1990 and 1991.

Not all of the projects funded FY1988 responded to the Secretary's priority of addressing high technology issues. Of the 36 grants awarded, the Office of Vocational and Adult Education (OVAE), U.S. Department of Education, has identified 23 as being "high technology," based on either the type of job for which training is offered (or curriculum developed) or the nature of the training being given the student. These 23 projects are the focus of the first year evaluations in this study.

A. An Assessment of Project Logic and Design

Ideally, the Program should fund only those applications that offer a definable treatment and the possibility of success. The identification of the discrete services and the determination of the likelihood for success of the proposed projects can be subjected to an evaluability assessment (EA). EAs traditionally determine how best to design a program evaluation, but the logic and plausibility components of the methodology can also be used to determine the clarity and coherence of individual projects undertaken as part of that overall program. The partial EA of the 23 FY1988 high technology projects determined the "clarity" and "coherence" of the designs of the funded projects.

Project logic and plausibility are both important predictors of project success and of the ability to measure that success. Eight projects were ranked high, ten projects were ranked medium, and five projects were ranked low in logic. Four projects ranked high, 12 projects ranked medium, and seven projects ranked low in plausibility. Most projects received a different ranking on logic than they did on plausibility.

To anticipate success, a project must be ranked highly on both logic and plausibility. This combined rating suggests that the project will be likely to accomplish the outcomes and activities stated in the application. That is, the project will have a greater likelihood for

demonstrating that it can achieve its stated goals. In contrast, projects rated low in either plausibility or logic are predicted to be less successful. Projects receiving mid-range ratings in either logic, plausibility, or both, are predicted to be only somewhat successful. When taking into account both factors, three projects were predicted successful; ten were predicted somewhat successful; and ten projects were predicted less likely to be successful.

The predicted success of the project based on the application's clarity and coherence can be compared with the actual success of the project based on the numbers of students trained. Among the three projects most likely to succeed, two projects (Valencia [mfg.] and Richland) fell short of their targeted number of students to be trained. Among the two projects (Skyline and Valencia [film]) somewhat likely to succeed, both projects met their training target, although Skyline had a much lower participation rate that initially expected. Among the three projects less likely to succeed, two projects (University of Wisconsin-Stout and Northampton) fell short of their targeted number of students to be trained. It appears that the clarity and coherence of the application is not a good predictor of the likely success of the training component of the project. Other aspects of the project, e.g., long term impacts on the labor market or numbers of students getting jobs because of the training could not be evaluated within the time-frame of the current study. Therefore, the clarity and coherence of the application as predictors of long term success is still unknown.

B. Project Implementation

Successful implementation meant that projects both carried out the activities proposed in the original grant application and accomplished the objectives of the project. However, the Department of Education can gain important lessons in the practicality of the project design and the operation of the demonstration program as a whole from projects that failed in one or both of these considerations.

1. Project Administration

Timing of Award: All but one of the projects visited began spending funds in January 1989, but most indicated that the timing of award notification was difficult for them. The main problem was that most of the grantees were academic institutions operating on a 9-month academic year beginning in September. By the time the grants started, almost half their potential "planning" year was over. Grantees that were already involved in activities for which Federal support was received were better able to accommodate the mid-year start date.

Hiring Staff: Most projects did not plan to hire new staff in key positions, but of those that planned to do so, few did. The timing of award and the 18-month time frame were the main problems, i.e., recruiting and hiring took several months and could not always be completed. These projects had difficulty either because no qualified candidate would take the position for only 18 months (or less by the time the recruitment procedures were fulfilled) or because the grantee did not want the responsibility for employing the staff after the grant ended. In several projects, responsibilities among staff members were shifted during the project and no permanent staffing "groove" was created before the grant was ended.

Purchasing Equipment: Most grantees perceived that grant funds could not be used to purchase equipment, although there was no outright restriction on equipment purchases in the FY1988 grant awards. The perception of the restriction probably led to fewer equipment

purchases. However, several projects expended considerable staff effort to find other sources of funding for equipment.

Establishing Private Sector Partnerships: The term "partner" had different meanings among projects. In most cases, the "partner" was a private employer enlisted by a public grantee. Most partners played limited and conventional roles: 1) offering one-time or periodic advice on curriculum design; 2) serving on projects' advisory committees; or 3) identifying marketable skills. Several projects also obtained donated equipment or other materials from local businesses, sometimes in return for training their employees.

Three of the eight projects visited were essentially customized training programs for employees of "partner" companies, and one planned to offer no-cost employer-specific training but ran out of time. Two projects provided broader training programs--one for people seeking employment in Toyota auto dealerships and one for potential employees in Universal Studios, but neither offered guaranteed employment. Two projects offered one-year introductory programs for high school students in particular high-tech fields but targeted no specific employers. Two projects had more extensive involvement of the private sector--in fact, were initiated by private employers. Some projects also established, or enhanced, "partnerships" between secondary school districts and postsecondary institutions.

Other Start-up Activities: At the outset, the assessment identified several activities likely to occur during the project start-up period, including recruiting students, adapting curricula, establishing management information systems, obtaining necessary approval and accredition for course offerings, identifying job opportunities, and conducting public relations activities. Some projects engaged in elaborate student recruitment efforts. Depending on the participants the projects planned to attract students already enrolled in secondary or postsecondary institutions, or persons who were not in school. Projects recruiting new, less-advantaged students invested heavily in recruitment. Those training current employees of a single "partner" employer or students already enrolled in the grantee

institution recruited less. One project encountered start-up problems when a private sector partner failed to provide promised training placements for graduates. Another project found planned access to private employers through an economic development agency no longer viable and was forced to forge new links.

2. A Summary of Project Content and Intermediate Outcomes

The projects studied exhibited four different emphases, each with different likely outcomes: 1) provision of technical training with the aim of job placement or upgraded jobs, 2) identification of the skills needed in particular occupations and development of appropriate curricula, 3) testing of existing programs to serve a wider set of industry needs, and 4) inservice training of faculty aimed at developing new courses. Some projects emphasized only one area while others aimed at two or more emphases.

Direct Training Services to Students: With one exception, all the visited projects emphasized the vocational or technical training of students, although the amount and duration of training varied. Some provided extensive training. For example, Skyline Community College provided each student 16 weeks of full-time automotive mechanics training per year for two years and planned to offer a third year for students to complete the program. Francis Tuttle provided more than 2,000 hours of training over 24 months. On the other hand, Northampton's training modules in surface mount technology offered only a few days training. In some extensive training projects, i.e., Francis Tuttle and Moorpark, only a part of the training was supported by the Federal grant, with grantee institutions or the partner organization providing the remaining funds. The role of training also varied. In two cases, training was provided in order to test new curricula: the main goal at Richland was to disseminate a new curriculum and train 250 students in materials technology and at Northampton training was used to test and refine curricula. These differences in goals and intentions make cross-site comparisons of the level and duration of training difficult.

None of the projects offered graduates a guarantee of a new job or a promotion; however, several said that these outcomes were likely. Several projects provided customized training to persons who were already employees (or trainees) of private companies.

Most visited projects provided short-term training separate from regular offerings, although a few tried to add new components to ongoing programs. Most projects were "add-ons" to regular work of the institutions--short-term training sessions at community colleges rather than new courses. The emphasis on customized training indicates the short-term focus--a product of the short-term Federal funding.

Curriculum Development: A secondary goal of some projects was the development of new curricula. All the projects except Indiana University engaged in a formal process to develop new curriculum and at four projects curriculum development was a major focus of the grant. Despite emphasis on curriculum development, few assessed the curricula they developed. Only a few of the projects systematically sought teacher feedback and adjusted programs accordingly. Only Richland reviewed curriculum systematically, prior to introducing the curriculum and none established means to determine the effectiveness of the curriculum in the classroom. One project simply packaged and distributed the "modules" developed by teachers who participated in an inservice training workshop.

Skills Identification: A number of projects proposed to demonstrate how to identify vocational and/or academic skills needed for employment in particular occupations, usually for those facing a shortage of qualified workers. But visited projects had developed systematic ways to identify needed job skills. Local business representatives on project advisory councils were often consulted about what they thought was needed. Several projects contacted local employers, not necessarily project partners, to find out what skills they wanted for employees or potential employees. Of the nine projects, one project surveyed local businesses and industries, and another conducted a literature review to identify skills.

Staff Development: A few of the projects emphasized staff development--probably because of the demonstration nature of the grants (staff development tends to be an activity with an inherently local focus). Two projects, Richland and University of Wisconsin-Stout, heavily emphasized staff development. They each brought together secondary and postsecondary instructors and helped them learn how to construct training modules in new fields or adapt develop new materials and experiments for use in the classroom. These projects effectively "tested" a model in which teachers develop curricula from information provided in workshops.

Nonetheless, most projects did train staff, although the level varied. Three projects introducing new curricula intensively trained teachers. One project trained staff to assess students' basic skills and taught them reading and math skills in a learning lab. Two projects already have staff development programs prior to receiving the Federal grant. Others (Valencia [film], Valencia [mfg.], and Indiana University) conducted no formal staff development, but allowed informal teacher training or encouraged instructors to spend their own time in curriculum development.

All projects planed to disseminate their findings, but only one made dissemination a major emphasis. Project directors at other sites made presentations at regional (or national) vocational education conferences and spread information to community colleges via association meetings and conferences.

3. Innovation Among Projects

The purpose of a demonstration can be to either 1) prove that an idea of concept works, much like an experiment, or 2) show how something works or performs, much like a presentation. Whereas the first purpose implies the development and testing of new ideas, the latter purpose stresses replication of existing ideas in new contexts. Program regulations for the Cooperative Demonstration Program do not specify which of the two (or both) purposes is to be addressed by the grantees and applicants are free to select which emphasis they wish to

pursue. The study team looked at two aspects of projects which may reflect the testing of new ideas: the high technology aspect of each project and the innovation, if any, in vocational education services.

The "high technology" characteristics of the nine Cooperative Demonstration Grant projects varied. They included:

- Training to prepare students for jobs in fields that manufacture high technology products;
- Training to enable students to use high tech equipment, in fields not usually considered to be high tech;
- Training in the use of computers, regardless of the field for which training is received; or
- Training in basic skills to prepare graduates for specific occupational training in high tech fields.

Although the FY1988 program regulations and application materials do not require projects to be innovative (nor is the term "innovative" even used), the study's Advisory Panel and staff felt that it was important for the demonstrations to advance the knowledge of the vocational education field by testing new ideas. At each project visited, the study team sought to understand what, if anything, the project saw as innovative or new in its offering. Much of what was observed during the site visit was hardly "cutting edge" with respect to instruction, partnership, supplementary or coordinated services, or serving special populations (as defined by the Perkins Act or otherwise).

The absence of innovation within and across projects might have been due to the absence of a priority for it in the regulations or points awarded for it in the scoring of applications. Lack of innovation might also be due to the short time frame of the grant--it is hard to start and complete an innovative project in 18 months.

Still, a few projects did manage to experiment with new designs, services, or partnerships.

Most projects met the needs of those they served--opening job opportunities in growing fields, upgrading workers' skills, exposing small firms to the opportunities offered by high technology equipment, and increasing the capacities of training institutions and staffs to train people in high technology fields. When asked who benefitted from the projects, project staff cited three beneficiaries: trainees, employers, and the institutions providing the training.

Finally, partner roles in project activities were limited and several projects failed to develop promised partnerships or failed to live up to expectations. In at least three projects (Skyline, Indiana University, and Moorpark) the private sector partners appear to have made inflated promises about what they could deliver. When forced to deliver job placements, employers seeking assistance, or support services, were unable to do so. Failure to deliver put these projects at risk.

C. Project Costs and Benefits

The third question is whether project costs are "reasonable" in relation to the projected or actual outcomes of the project. Project costs are defined as the Cooperative Demonstration Program grant plus the non-Federal cash and/or in-kind matching contributions provided by the grantees. The outcomes of the project are defined as the numbers of students trained, the number of staff trained (if the project also focused on staff development), and the number of course hours developed (if the project also focused on curriculum development). "Reasonableness" compares costs and benefits among projects rather than comparing them to some absolute standard. No attempt was made to assign a monetary value to the benefits resulting from the project outcomes (e.g., the dollar value to the student for having learned the new skill), but compares project treatment costs and outcomes. Average project costs and outcomes were aggregated to allow an overall cost estimate and benefit estimate. Cooperative Demonstration Program grants, however, require that the grantee contribute at least 25 per cent of the total project costs. Thus, project costs consist of both the Cooperative Demonstration Program grant amount and the grantee match. Project costs, therefore, are the sum of all resources--financial and non-financial--of accomplishing proposed and/or actual activities.

Total project costs ranged from $308,335 for Northampton Community College to $759,842 for Richland Public Schools. Only one project, Skyline Community College, received other grants that contributed directly to the Cooperative Demonstration Program project but which were not reported as part of the local match. The percent of total project costs contributed by the grantee ranged from 26.1 percent by Northampton Community College to 57.6 by Richland Public Schools. The district with the lowest total project costs also contributed the lowest while the district with the highest total project costs contributed the highest local match.

Project benefits are the outcomes that improve the quality of the vocational-education process. These can be quantifiable (e.g., the number of students successfully completing training) or non-quantifiable (e.g., a new technique for skills identification). Non-quantifiable outcomes are difficult to measure and to express in terms that would allow comparison among projects. Consequently, the cost benefit analyses focus only on quantifiable outcomes--those activities for which cost data were available (either through the grantees accounting system) or through the final grant budget. Three activities were measured through costs data or budget allocations: planning and administration; student training; and curriculum development. Planning and administration costs include: the wages of the project director and clerical staff, associated fringe benefits, other direct costs associated with administration, and indirect costs. Student training costs include: the wages of instructors and other specialists, associated fringe benefits, other direct costs (e.g., textbooks, supplies, travel, and stipends), and indirect costs. Curriculum development costs include: the wages of instructors and curriculum development specialists, associated fringe benefits, other direct costs (e.g., training workshops, travel, and printing), and indirect costs.

The separate cost and benefit factors were used to address four issues. The proportion of total project resources devoted to services instead of administration ranged from a low of 64.8 percent in Moorpark to a high of 97.6 percent in Richland. The costs for Richland appear artificially low because it does not include the cost of administration in partner schools. Second, the amount of training per student completer ranged from 2.3 hours at the University of Wisconsin-Stout to 1,280 hours at Skyline Community College. Staff training ranged from 30 hours per teacher to 160 hours per teacher. Third, the average unit cost for student training ranged from a low of $0 at the University of Wisconsin-Stout (all training costs were born by the participating schools as part of their regular teaching responsibilities) to a high of $25.53 at Indiana University.

It should be noted that comparing the average cost per hour of training across projects may create an unfair comparison because of the variations in the intensity of the training and the number of students being trained. The average cost for an hour of training at Indiana University was the highest of the projects, but that project also trained the second highest number of students. To provide a more accurate comparison, the analysis should compute the average cost per hour of training per student trained. The per hour per student costs range from a low of $0.00 for the University of Wisconsin to a high of $.89 at Skyline Community College. The costs for the remainder of the projects tend to concentrate between $.01 and $.06 per hour. Skyline's costs are out of proportion with the other projects because so few students were hired into the program by the Toyota dealers and the program operated at a level far lower than originally planned.

Fourth, the total treatment cost was calculated as the sum of all costs associated with providing the program. Service costs ranged from a low of $0 at University of Wisconsin to $19,266 at Skyline Community College. (Skyline's costs are out of proportion with the other projects because the project trained fewer students than originally planned.)

The answer to the question "are project costs reasonable in relation to project outcomes?" appears to be yes for all project except Skyline. The per unit and per outcome costs for other projects were similar even though total costs and project intensity varied substantially. Although the reasons for Skyline's costs were understandably high, their results suggest that the project was unsuccessful as a model for other vocational education institutions.

I. INTRODUCTION

This report summarizes the activities and the findings of an evaluation of 23 projects funded by the Cooperative Demonstration Program (High Technology) in FY1988. The evaluation answers three important questions about the projects. First, did the grant applications submitted for funding present a clear and coherent design for a project? Second, were the grantees able to implement their project designs as proposed, and, if not, what problems prevented that implementation? Third, were project costs reasonable relative to projected or actual outcomes? Each question is addressed in a separate section.

Overview of the Cooperative Demonstration Program

The Cooperative Demonstration Program (PL 98-524, Title IV, Part B, Subpart 1) is the largest demonstration effort currently supported under the Carl D. Perkins Vocational Education Act of 1984. The Program provides the U.S. Department of Education (ED) and educational institutions an opportunity to try new approaches to vocational education and to learn about the effectiveness of those approaches. Funded projects reflect the Act's priorities: increased access to high quality programs for special populations and the overall improvement of the quality of vocational education. Projects are also to demonstrate successful cooperation among private employers and public agencies that results in training in advanced vocational education skills. A variety of models are suggested, including: work experience and apprenticeship, worksite training, placement, and public works. Agencies eligible to apply include state education agencies (SEAs), local education agencies (LEAs), postsecondary educational institutions, institutions of higher education, and other public and private agencies, organizations, and institutions.

Projects may be funded through grants, cooperative agreements, or contracts and may be:

1. Model projects providing improved access to quality vocational education programs for--

   -handicapped individuals;

   -disadvantaged individuals;

   -adults who are in need of training and retraining;

   -individuals who are single parents or homemakers;

   -individuals who participate in programs designed to eliminate sex bias and stereotyping in vocational education;

   -criminal offenders who are serving in a correctional institution; and

   -men and women seeking nontraditional occupations.

2. Projects that are examples of successful cooperation between the private sector (including employers, consortia or employers, labor organizations, and building trade councils) and public agencies in vocational education, including State boards and eligible recipients. The projects must be designed to demonstrate ways in which vocational education and the private sector of the economy can work together effectively to assist vocational education students to attain the advanced level of skills needed to make the transition from school to productive employment, including

   -work experience and apprenticeship projects; transitional worksite job training for vocational education students which is related to their occupational goals and closely linked to classroom and laboratory instruction provided by an eligible recipient;

   -placement services in occupations which the students are preparing to enter; and

-where practical, projects that will benefit the public, such as the rehabilitation of public schools or housing in inner cities or economically depressed rural areas.

The projects may include institutional and on-the-job training, support services authorized by the Act, and such other necessary assistance as the Secretary determines to be necessary for the successful completion of the project.

3. Projects to overcome national skill shortages, as designated by the Secretary in cooperation with the Secretary of Labor, Secretary of Defense, and Secretary of Commerce.

4. Such other activities which the Secretary may designate which are related to the purposes of the Act. [Federal Register, 1985 pp. 33260-33261.]

All projects, however, must directly serve people enrolled in vocational programs and be widely replicable by service providers. Furthermore, grant recipients must provide, through cash or inkind contributions, a minimum of 25 percent of the total cost of the demonstration project. The contributions can include the fair market value of facilities, overhead, personnel, and equipment.

In addition to the priorities contained in the Act, the Secretary of Education has the prerogative each year for establishing additional priorities for the Program. In the first year of the Program (FY1988), an invitational priority was issued for projects addressing high technology (in FY1989 this became an absolute priority). The term "high technology" was defined to mean:

> state-of-the-art computer, microelectronic, hydraulic, pneumatic, laser, nuclear, chemical, telecommunication, and other technologies being used to enhance productivity in manufacturing, communication, transportation, agriculture, mining, energy, commercial, and similar economic activity,

and to improve the provision of health care [34 CFR 400.4(b)].

The Application Process

The projects funded by the Program were proposed and implemented by educational institutions, private agencies, and other organizations. Each year since the Program began in FY1988, the Office of Vocational and Adult Education (OVAE), U.S. Department of Education, has solicited grant applications from agencies or organizations interested in conducting demonstrations. Program guidelines, along with instructions for submitting applications, were published in the Federal Register and mailed directly to perspective applicants.

In general, the application process was as follows. Applicants prepared and submitted project applications according to the published guidelines. Applications were reviewed by OVAE staff and internal reviewers. Applicants were asked to clarify any unclear aspects of their applications. The applications were judged according to the following selection criteria and point allocations:

- Statement of need (15 points);
- Plan of operation (30 points);
- Quality of key personnel (10 points);
- Budget and cost effectiveness (10 points);
- Evaluation plan (5 points);
- Adequacy of resources (5 points);
- Private sector involvement (10 points);
- Employment opportunities (5 points); and
- Dissemination (10 points).

The projects receiving the top scores were awarded grants. As many projects were funded as the program budget would allow. In FY1988, a total of $9.5 million was awarded.

Of 181 applications submitted in the first year of the Program (FY1988), 36 were approved and given grants ranging in size from $50,000 to $550,000. The winning projects were notified in October 1988 and began operation as early as December 1988. Although operating in calendar year 1989 and 1990, the first cohort of projects are considered FY1988 projects because the funding was appropriated from FY1988 Perkins Act funds. (The second cohort of projects--a total of 30--was funded from FY1989 funds and began operation around January 1990.)

Not all projects funded in FY1988 had responded to the Secretary's invitational priority of addressing high-technology issues. Of the 36 grants awarded, OVAE identified 23 as being "high technology," based on either the type of job for which training was conducted (or curriculum developed) or the nature of the training given students. These 23 projects were the focus of the first year evaluation effort. The list of the FY1988 high technology projects is presented in Exhibit 1.

Defining Project Boundaries

For purposes of this evaluation, the "project" is defined as those activities funded by the Cooperative Demonstration Program grant and matching funds and occuring within the 18-month grant period. Services provided before or after the grant period and benefits accruing after the end of the grant are not included in the present scope of inquiry. Also not included is the underlying training and support services offered to project enrollees. For example, a project participant might enroll in training developed with project funds and provided by a project-supported instructor, using equipment donated by a local business as an official project "match." Yet to complete the degree or certificate for which the training was developed, the student may be expected (by the project design) to enroll in additional instruction in the same institution in courses not supported by the project. Students might also use financial aid or support services, provided by or through the institution, that were not part of the project. All

Exhibit 1

GRANTEES WITH HIGH TECHNOLOGY PROJECTS

Grantee	Project
Division of Vocational/Education Services State Department of Education Montgomery, Alabama	Student Apprenticeship Linkage in Vocational Education
Skyline College San Bruno, California	Toyota/Skyline Partnership for Automotive Technician Training
Ventura Community College District Moorpark College Moorpark, California	Non-college Bound Student Demonstration Project - Electronics/Laser/Electro-optics
Valencia Community College Orlando, Florida	A Model, Replicable Advanced Manufacturing Demonstration Project
Valencia Community College Orlando, Florida	Film Production Technology Training Program
Parkland College Champaign, Illinois	Advanced Certification Program for Computer Graphic Specialists
Waubonsee Community College Sugar Grove, Illinois	A Comprehensive Development Plan in Office Skills
Indian Hills Community College Ottumwa, Iowa	Indian Hills Cooperative Demonstration Program
Hampden County Employment Training Consortium Springfield, Massachusetts	Project CREATE: Cooperative Re-and sources to Enhance Access to Jobs Through Technical Education
Central Community College-Platte Campus	Competency-Based Modular Assessment and Training for Maintenance Technicians in Manufacturing
Postsecondary Vocational-Technical Education Concord, New Hampshire	New Hampshire Automotive Education Collaborative

Exhibit 1, (continued)

Grantee	Project
Southern Growth Policies Board Research Triangle Park, North Carolina	Consortium for Manufacturing Competitiveness
University of North Dakota-Lake Region Devils Lake, North Dakota	Flight Simulator Maintenance Technician
Toledo Public Schools Toledo, Ohio	Industrial Automation Mechanic Model Curriculum
Francis Tuttle Vocational Technical Center Oklahoma City, Oklahoma	High Technology Partnership Project
Portland Community College Portland, Oregon	Women in Education for Apprenticeship and Non-Traditional Employment
Northampton Community College Bethlehem, Pennsylvania	Turn-key Surface Mount Training Program
Indiana University of Pennsylvania Reschini House Indiana, Pennsylvania	Northwestern Pennsylvania Cooperative Demonstration for Technical Updating
Greenville Technical College Greenville, South Carolina	Project TEAM: Technical Education Advancement Modules
El Paso Community College El Paso, Texas	CAREER Program: Career Assessment, Remediation, Education, Employment, and Re-entry
Richland School District Kennewick, Washington	Materials Technology: The Common Core Skills That Are Shaping the Future

Exhibit 1, (continued)

Grantee	Project
Yakima Valley Community Yakima, Washington	Extending Health Training and Services to Rurally Isolated Populations in a Depressed Area
University of Wisconsin-Stout Menomonie, Wisconsin	Implementing a High-Tech Training Model for Rural Based Business and Industry, Technical Colleges, and Local and State Education Agencies

components might be necessary to complete the degree or certificate, but only those directly funded by the grant are included in the present evaluation.

The boundaries of the project do include the interorganizational networks that developed in the course of carrying out a project's mission. Grantee institutions entered into a variety of formal and informal relationships with other organizations to offer students support services, provide them with jobs, or provide the project with additional financial or other assistance.

In its June 1990 meeting, the evaluation's Advisory Panel expressed three concerns about the definition of a project. First, they felt that 18 months was too short for a truly innovative project--or perhaps any project--to show results. The limited time frame may have made the Program less attractive to secondary (but not post-secondary) institutions, resulting in fewer applicants. Second, the Panel felt that limiting the evaluation to the grant period did not allow the history of the project or institution to be taken into account. Projects may be a part of a larger on-going efforts by grantees, and the important effects will be from the larger effort rather than the one part. Third, the Panel did not want to limit the evaluation to what was accomplished with Federal funds. They felt the study asked only whether the Federal money made a difference rather than whether the overall project (of which the Federal funds supported a part) was able do new things and help students. Furthermore, the study should determine if the project would have started without Federal funding. Limiting the scope to the Federal funding and direct local match made it difficult to gauge the importance of the grant within a larger institutional effort.

The Panel recommended expanding the evaluation period beyond 18 months to include both prior grantee activities and effects after the grant period. The study team should select the most interesting projects from the first round of grants (e.g., University of Wisconsin - Stout, Richland School District, and Moorpark College) and track them after the Federal grants end. This would not necessarily

mean a second site visit; additional participant and outcome data could be collected through mail and telephone survey. These recommendations have been incorporated in evaluation design and definition of project boundaries for Year 2.

Overview of this Report

The first year report is presented in five sections. Section I presents an introduction to the Cooperative Demonstration Program and the three major questions to be addressed in the evaluation. Section II describes the modified, evaluability assessment done of the 23 FY1988 projects and answers the first study question regarding the clear and coherent design of the projects. Section III describes the implementation experience of a subset of FY1988 projects as determined through a telephone survey of nine projects and site visits to eight of those nine projects. Section IV analyzes project costs relative to project accomplishments and answers the third study question regarding the "reasonableness" of project costs. Section V summarizes the findings of the first four sections and recommends potential improvements in the program.

II. AN ASSESSMENT OF PROJECT LOGIC AND DESIGN

Aplications for Cooperative Demonstration Program grants are submitted to the U.S. Department of Education where the applications are reviewed and ranked by a panel of experts. The review and award process is intended to accomplish two objectives. First, it identifies applications capable of achieving the purpose of the demonstration program--the design of new program or the replication of a validated, existing program. Second, the process identifies applications describing projects likely to succeed--to accomplish project objectives in a timely and measurable manner.

Projects which are clear and coherent in their design are more likely to succeed. Although applications are not awarded specific points for clarity and coherence, these characteristics are important to the success of the project and its ability to yield measurable outcomes. Applicants are requested to submit a "concise and clearly written Program Narrative" that includes:

- A clear description of the need for the proposed project;
- A clear statement of what the project seeks to demonstrate;
- A clear description of how the objectives of the project relate to the purposes of the program; and
- A clear description of how the applicant will provide equal access and treatment for eligible project participants. [Federal Register, 1985.]

This section analyzes the extent to which the funded applications present a clear and coherent design.

Because applicants are permitted to be creative, and because there are few requirements restricting what applicants may propose to do, the reviewers face a twofold challenge. First, they must identify what the

applicants are proposing to do. The applications may be unclear about objectives and intended outcomes. Second, reviewers must determine whether the stated oucomes and methods are plausible. Activities and outcomes may be clearly stated, but how the former will achieve the latter may not be clear--the work proposed may not be reasonable given time and resource constraints.

Ideally, only applications offering a discrete set of services and the possibility of success should be funded. Identifying discrete services and the likelihood of success can be determined using a methodology known as "evaluability assessment" (EA). EAs are traditionally used to determine the appropriate design for a program evaluation, but the logic and plausibility components of the methodology can also be useful to determine the clarity and coherence of individual projects within a broader program. This section assesses the logic and plausibility of the 23 high technology projects funded under the Cooperative Demonstration Program in FY1988. This partial EA determines the extent to which the designs of the funded projects are "clear" and "coherent."

This section is organized into three parts. Part A describes the procedures used to develop a logic model for each project and to score the level of project logic. Part B describes the procedures used to score the plausibility of the project design. Part C summarizes the results of the scoring of project logic and plausibility.

A. Assessing the Logic of the Project Design

Projects are likely to be more successful if applications clearly and logically describe the activities to be accomplished and the objectives to be achieved. A design may be clear but not logical; also, some components may be clear and logical and others may not be. Logic requires well-defined objectives (defined in terms of specific inputs, activities, and outcomes) and activities linked to those outcomes.

To determine logic, the study team reviewed each application to identify:

- A statement of inputs or resources;
- A statement of activities or events;
- A statement of outcomes (both short- and long-term); and
- A statement of causal links among events and outcomes, establishing the expected flow of outcomes and results of the project.

For each of the 23 reviewed applications, the study team recorded the components in a logic shell. The shell enabled analysts to display in respective columns the links among the components and the existing logic of a project. Two contrasting examples of logic models are provided. Figure 1 displays a logic model where several activities are linked to outcomes, suggesting a clear and logical design. Figure 2 displays a project with few evident linkages, suggesting a design with clearly stated components but with no logical relationships among those components. Scoring the logic model determines whether there is a logical design, not just an observation of graphically-presented project components and linkages. Scoring procedures for the logic models are described below.

Developing the Logic Model

The study team followed six steps to model the project's logic for achieving its proposed outcomes. The model was developed solely with information in the grantee's application. First, the team reviewed the contents of the project folder and assembled all material pertaining to the grant application. Sources were the original application, any revisions to the application, correspondence dated prior to the award

Figure 1

ILLUSTRATIVE LOGIC MODEL WITH NUMEROUS LINKAGES

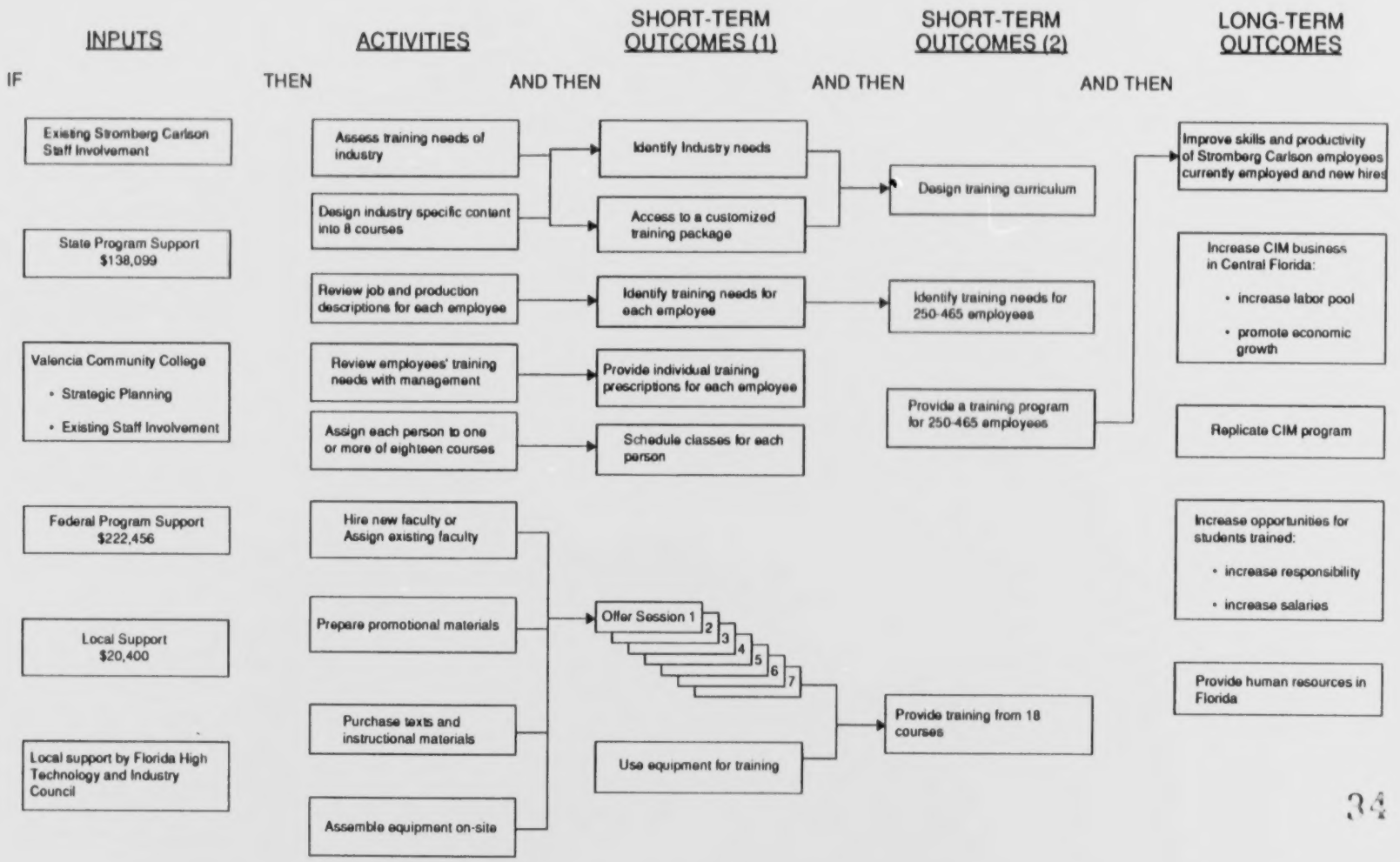
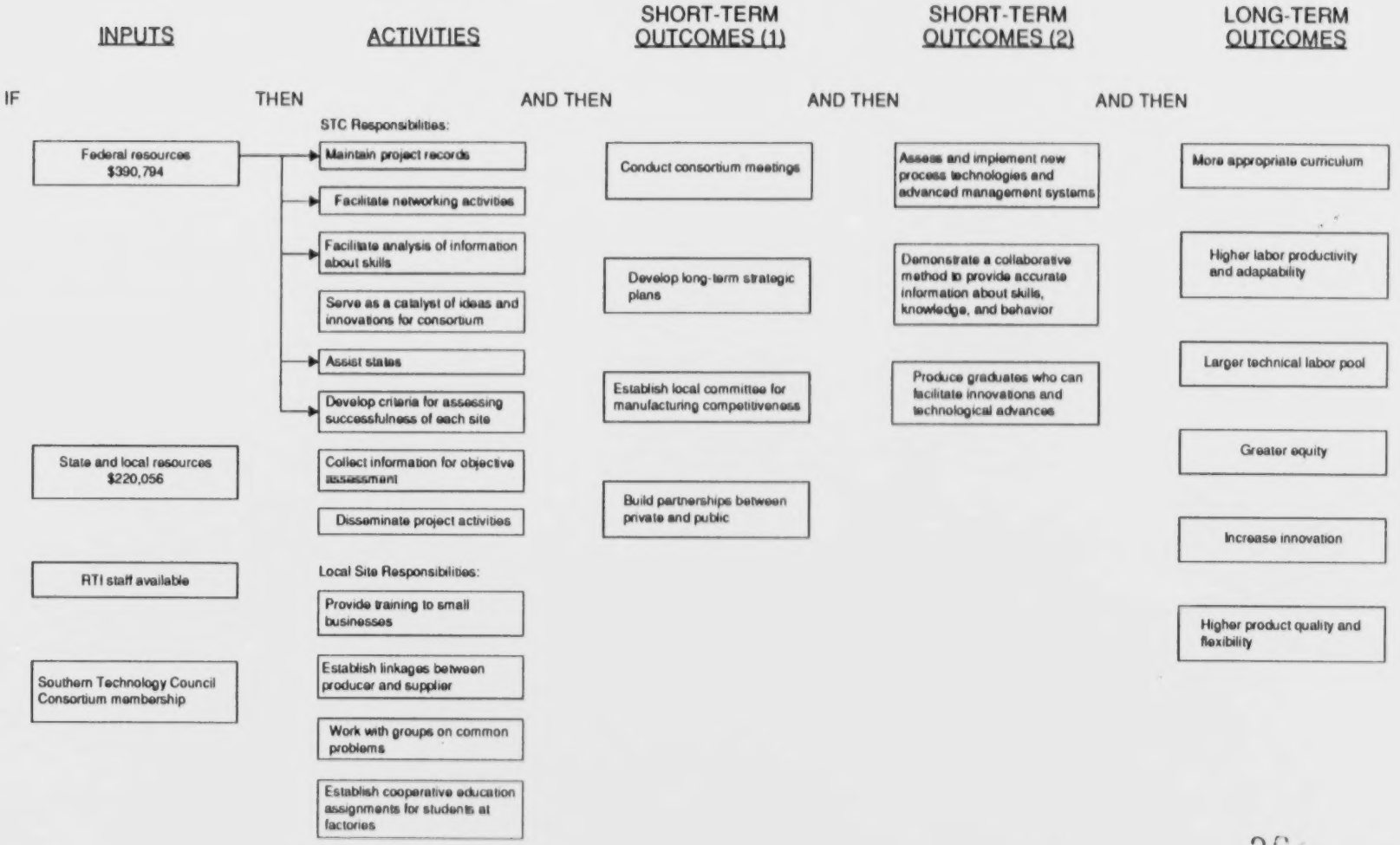

INPUTS
ACTIVITIES
SHORT-TERM OUTCOMES (1)
SHORT-TERM OUTCOMES (2)
LONG-TERM OUTCOMES
IF
THEN
AND THEN
AND THEN
AND THEN
Existing Stromberg Carlson Staff Involvement
State Program Support $138,099
Valencia Community College
• Strategic Planning
• Existing Staff Involvement
Federal Program Support $222,456
Local Support $20,400
Local support by Florida High Technology and Industry Council
Assess training needs of industry
Design industry specific content into 8 courses
Review job and production descriptions for each employee
Review employees' training needs with management
Assign each person to one or more of eighteen courses
Hire new faculty or Assign existing faculty
Prepare promotional materials
Purchase texts and instructional materials
Assemble equipment on-site
Identify industry needs
Access to a customized training package
Identify training needs for each employee
Provide individual training prescriptions for each employee
Schedule classes for each person
Offer Session 1 2 3 4 5 6 7
Use equipment for training
Design training curriculum
Identify training needs for 250-465 employees
Provide a training program for 250-465 employees
Provide training from 18 courses
Improve skills and productivity of Stromberg Carlson employees currently employed and new hires
Increase CIM business in Central Florida:
• increase labor pool
• promote economic growth
Replicate CIM program
Increase opportunities for students trained:
• increase responsibility
• increase salaries
Provide human resources in Florida

Figure 2

ILLUSTRATIVE LOGIC MODEL WITH FEW LINKAGES


INPUTS
ACTIVITIES
SHORT-TERM OUTCOMES (1)
SHORT-TERM OUTCOMES (2)
LONG-TERM OUTCOMES
IF
THEN
AND THEN
AND THEN
AND THEN
STC Responsibilities:
Federal resources $390,794
Maintain project records
Facilitate networking activities
Facilitate analysis of information about skills
Serve as a catalyst of ideas and innovations for consortium
Assist states
Develop criteria for assessing successfulness of each site
State and local resources $220,056
Collect information for objective assessment
Disseminate project activities
RTI staff available
Local Site Responsibilities:
Provide training to small businesses
Southern Technology Council Consortium membership
Establish linkages between producer and supplier
Work with groups on common problems
Establish cooperative education assignments for students at factories
Conduct consortium meetings
Develop long-term strategic plans
Establish local committee for manufacturing competitiveness
Build partnerships between private and public
Assess and implement new process technologies and advanced management systems
Demonstrate a collaborative method to provide accurate information about skills, knowledge, and behavior
Produce graduates who can facilitate innovations and technological advances
More appropriate curriculum
Higher labor productivity and adaptability
Larger technical labor pool
Greater equity
Increase innovation
Higher product quality and flexibility

date of the grant, grant award documents, and any supplementary material submitted by the applicant prior to the date of award.

Second, the team identified any long-term project outcomes from the "Introduction," "Statement of Need," and "Objectives" sections of the application. The long-term outcomes were listed on the logic model shell. The team recorded the information as stated in the application and, if available, specified the target population. Verbs were used to begin each of the statements to aid in the visual presentation of the logic model.

Third, the team identified any short-term objectives using information from the "Plan of Operation" section of the application. These were listed on the logic mode shell. The team recorded the information as stated in the application and specified the target population. Again, verbs were used to begin each statement.

Fourth, the team identified proposed activities from the "Plan of Operation" section of the application. The activities were listed on the logic model shell. Again, the team recorded the information as stated in the application and began the statements with verbs. Fifth, the team identified the resources and other inputs available to the project on the first day of the grant award as stated in the "Budget," "Introduction," and elsewhere in the application. The resources were listed on the logic model shell.

Finally, the team prepared a flow model of causal relationships among inputs, activities, short-term goals, and long-term goals. These relationships were designated by arrows from one box to another. To determine the relationship among inputs and activities, the team reviewed the budget narrative for evidence of how funds, Federal and local, were to be spent. A linkage was represented in the flow diagram when the narrative corresponded to activities specified on the diagram. Other relationships stated in the remainder of the application were added in the flow diagram. Since paragraphs represent complete thoughts, a linkage was considered explicit only if the two elements were expressed within the same complete thought. This is a restrictive requirement that affected final rankings. However, without such a

restriction, analysts could not determine whether elements in separate paragraphs were intended by the applicant to be connected. Boxes not connected by arrows represented gaps in the flow of logic.

Scoring Project Logic

Using this logic model, applications were scored in three steps. First, the study team counted the number of inputs, activities, short-term outcomes, and long-term outcomes. Second the team determined whether there were activities identified for achieving each short-term outcome, assigning one point for each short-term outcome supported by at least one activity and subtracting one point for each short-term outcome not supported by at least one activity. Third, the team determined whether there were short-term outcomes identified for achieving each long-term outcome. Again, the team assigned one point for each long-term outcome supported by at least one short-term outcome and subtracted one point for each long-term outcome not supported by at least one short-term outcome. The scoring provided the basis for analyzing the logic of the project designs.

The design of the project was considered clear and logical if it met five conditions:

1. It identified one or more long-term outcome(s) for the project, e.g., access to quality vocational education training or making local industry more competitive;

2. It identified one or more short-term outcomes that would be achieved during the grant period and which would help achieve the long-term outcome(s);

3. It specified one or more activities that would be implemented during the grant period that would help achieve a short-term or long-term outcome;

4. It had more linkages than gaps among activities and short-term outcomes--scoring positive logic points (a project that has four stated linkages and two gaps would

have a net score of +2). Otherwise, projects would have spent time and money just planning; and

5. It had more linkages than gaps among short-term and long-term outcomes. Total points must be positive (a project with three stated linkages and four gaps would have a total score on this criterion of -1).

Results of the Logic Assessment

For each grantee, a project model was developed including: inputs, activities, short-term outcomes, and long-term outcomes. All 23 projects addressed these components in their applications. Many projects used similar inputs, activities, and outcomes. Table 1 shows the common types across the projects. Typical inputs included Federal, State, and local dollars, staff already on board (versus hiring new staff), and equipment already in operation. Typical long term outcomes included "creating a qualified labor pool" and "attracting new business to the community" through a strong economy and labor pool. Projects emphasized economic growth, dissemination, and impact of training on students and community.

Description of the Project Logic. Using the scoring procedures described above, each project was assigned an overall logic score. After testing for the presence of all five conditions, it was found that:

- All 23 projects identified one or more long-range outcome;
- Ten projects linked one or more short-term outcome(s) to a long-term outcome;
- 21 projects linked one or more activities to a short- or long-term outcome;
- 16 projects displayed more linkages than gaps between activities and short-term outcomes; and

Table 1

ILLUSTRATIVE COMPONENTS OF PROJECT DESIGN

Types of Input	Types of Activities	Types of Short-Term Outcomes	Types of Long-Term Outcomes
• Staff on board	• Hire staff	• Competency statements	• Increase qualified labor pool
• Partnership established	• Develop advisory boards	• Curriculum materials	• Attract new business
• Equipment available	• Develop curriculum materials	• Accreditation guidelines	• Create a competitive high-tech business and industry
• Federal Resource $	• Develop strategies for recruitment	• Students enrolled	• Greater equity
• State Resource $	• Develop dissemination plans	• Students graduate	• Increase equity
	• Field-test materials		
	• Match training to partner requirements		
	• Identify industry skills		

- Five projects displayed more linkages than gaps between short-term and long-term outcomes.

Figure 3 shows typical linkages among project components. However, the most common linkages were between: the number of students trained and courses offered; skills identified by industry and related curriculum; and number of students trained to improved labor pool in the community.

Analysis of the Project Logic. Logical projects met the five conditions outlined above. Table 2 displays each project against each condition and the total for the project across the five conditions. Eight projects received a high logic rating, ten projects received a medium rating, and five projects received a low rating (see Table 3). Portland Community College, for example, proposed a highly rated project which met all five conditions: 1) identified at least one long-term outcome, 2) linked at least one short-term outcome to a long-term outcome, 3) linked at least one activity to short- and long-term outcomes, 4) showed more linkages than gaps between activities and short-term outcomes (+14 linkages), and 5) showed more linkages than gaps between short-term and long-term outcomes (+4 linkages). In contrast, Southern Growth Policies Board only displayed a long-term outcome and no linkages, meeting only one of the five conditions.

Overall, the applications tended to identify longer range outcomes and to link activities to short-term outcomes. To demonstrate a logical design, however, the applications also needed to identify additional linkages. First, they needed to show relationships between a short-term outcome and a long-term outcome. Although 21 applications linked at least one short-term outcome to long-term outcomes, they did not do so consistently. Only five projects consistently linked short-term outcomes to long-term outcomes.

Figure 3

ILLUSTRATIVE LINKAGES

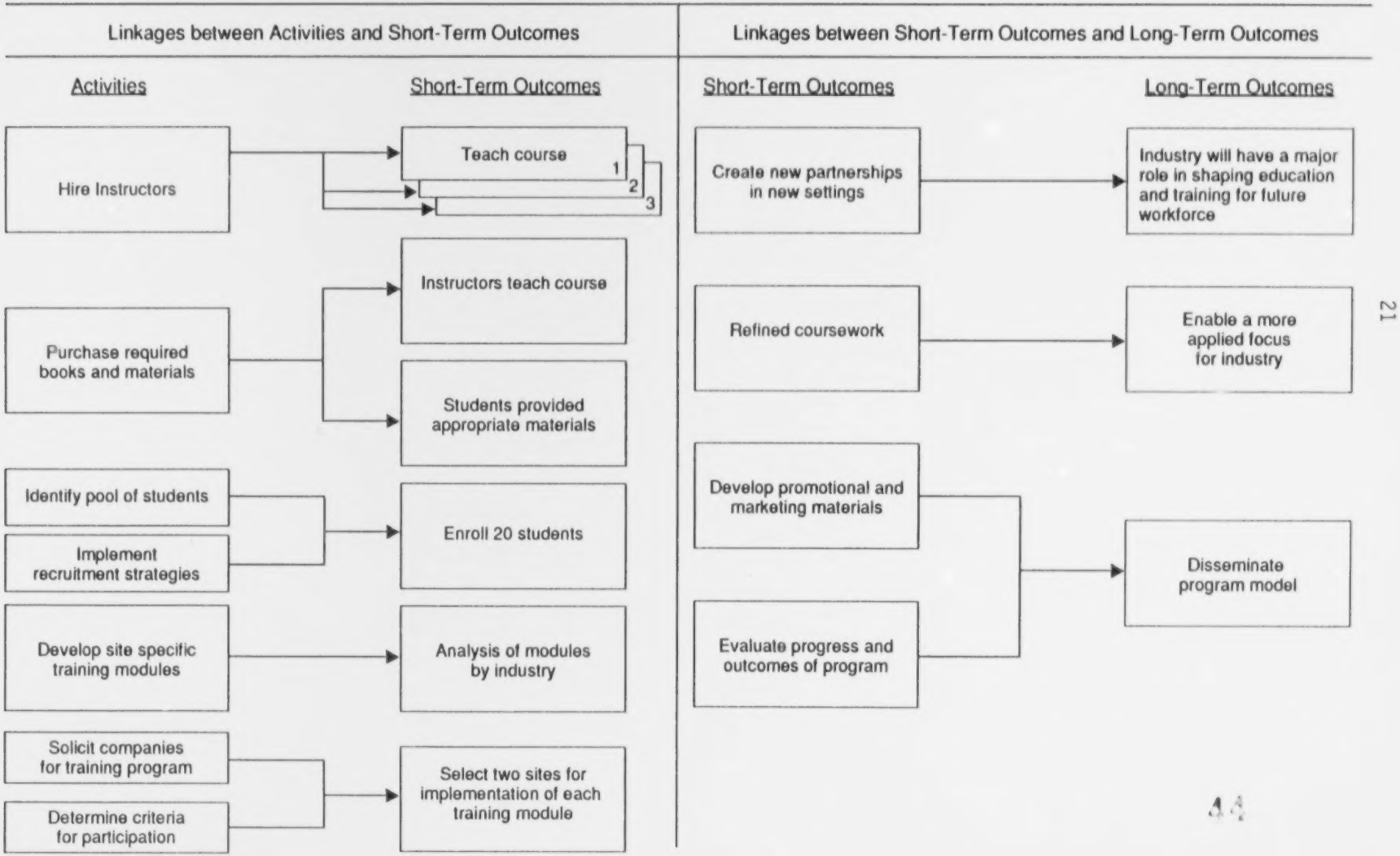

Linkages between Activities and Short-Term Outcomes
Activities
Short-Term Outcomes
Hire Instructors
Teach course
1
2
3
Purchase required books and materials
Instructors teach course
Students provided appropriate materials
Identify pool of students
Implement recruitment strategies
Enroll 20 students
Develop site specific training modules
Analysis of modules by industry
Solicit companies for training program
Determine criteria for participation
Select two sites for implementation of each training module
Linkages between Short-Term Outcomes and Long-Term Outcomes
Short-Term Outcomes
Long-Term Outcomes
Create new partnerships in new settings
Industry will have a major role in shaping education and training for future workforce
Refined coursework
Enable a more applied focus for industry
Develop promotional and marketing materials
Evaluate progress and outcomes of program
Disseminate program model

Table 2

RESULTS OF PROJECT LOGIC

Project	Conditions for Project Logic					
	One Design must identify 1 or more long-term outcomes	Two Design identifies 1 or more short-term outcomes that are linked to long-term outcome	Three Design specifies 1 or more activities linked to short- or long-term outcomes	Four Design must have more linkages than gaps between activities and short-term outcomes	Five Design must have more linkages than gaps between short- and long-term outcomes	Total
1. Division of Vocational Education Services	+	–	–	–	–	+1
2. Skyline College	+	–	+	+	–	+3
3. Ventura Community College District	+	+	+	+	–	+4
4. Valencia Community College (manufacturing)	+	+	+	+	–	+4
5. Valencia Community College (film)	+	–	+	+	–	+3
6. Parkland College	+	–	+	+	–	+3
7. Waubonsee Community College	+	+	+	+	–	+4
8. Indian Hills Community College	+	+	+	–	–	+3
9. Hampden County Employment and Training Consortium	+	–	+	+	–	+3
10. Central Community College—Platte Campus	+	+	+	–	+	+4
11. Postsecondary Vocational-Technical Education	+	–	+	+	–	+3
12. Southern Growth Policies Board	+	–	–	–	–	+1
13. University of North Dakota—Lake Region	+	–	+	+	–	+3
14. Toledo Public Schools	+	–	+	+	–	+3

(Continued on next page)

Table 2, (Continued)

Project	Conditions for Project Logic					
	One Design must identify 1 or more long-term outcomes	Two Design identifies 1 or more short-term outcomes that are linked to long-term outcome	Three Design specifies 1 or more activities linked to short- or long-term outcomes	Four Design must have more linkages than gaps between activities and short-term outcomes	Five Design must have more linkages than gaps between short- and long-term outcomes	Total
15. Francis Tuttle Vocational Technical Center	+	+	+	+	+	+5
16. Portland Community College	+	+	+	+	+	+5
17. Northampton Community College	+	–	+	–	–	+2
18. Indiana University of Pennsylvania	+	+	+	+	+	+5
19. Greenville Technical College	+	–	+	–	–	+2
20. El Paso Community College	+	–	+	+	–	+3
21. Richland School District	+	+	+	+	+	+5
22. Yakima Valley Community College	+	–	+	+	–	+3
23. University of Wisconsin—Stout	+	–	+	–	–	+2

Table 3

SUMMARY OF PROJECT LOGIC

High in Project Logic		Medium	Low in Project Logic	
Meets all 5 Conditions	Meets 4 Conditions	Meets 3 Conditions	Meets 2 Conditions	Meets 1 Condition
Francis Tuttle Vocational Technical Center Portland Community College Indiana University of Pennsylvania Richland School District	Ventura Community College District Valencia Community College (manufacturing) Waubonsee Community College Central Community College-Platte Campus	Skyline College Valencia Community College (film) Parkland College Indian Hills Community College Hampden County Employment and Training Consortium University of North Dakota-Lake Region Postsecondary Vocational Technical Education Toledo Public Schools El Paso Community College Yakima Valley Community College	Northhampton Community College Greenville Technical College University of Wisconsin-Stout	Division of Vocational Educational Services Southern Growth Policies Board

Second, the projects needed to clearly indicate how the resources will be used for conduct of the activities. Many projects indicated the person(s) to be hired or whose time would be bought. However, they seldom indicated what the person would be doing to accomplish the outcomes.

B. Assessing the Plausibility of Project Design

This section describes the procedure for assessing the plausibility of the project based on the logic model.

Plausibility Defined

A plausible project is one that has some likelihood of achieving its short term objectives. "Short term" means within the 18 months of the grant award period. Project objectives may be implausible because schedules are unrealistic, resources are insufficient, or because available knowledge suggests that the project is not likely to achieve its objectives. Assessment plausibility consists of determining the degree to which a project is:

- Well defined;
- Can be completed with available resources; and
- Can be completed within the available time.

From the logic model, the study team judged the plausibility of the set of events and causal links between inputs, activities, and outcomes. The outcomes were considered plausible if project activities would achieve progress toward the outcomes. For each outcome, the following questions were asked to determine the project's plausibility: 1) are there adequate resources to achieve the outcome?; 2) is the schedule for achieving the outcome reasonable?; and 3) do the activities suggest an understanding of the necessary steps to achieve the outcome? The answers to these questions were recorded in a summary chart arraying the projects.

Procedures for Assessing Plausibility

The study team first reviewed the logic model and the grant application to determine whether there were adequate resources (inputs) for each proposed activity. Each activity supported by at least one

input was given one point. One point was subtracted for each activity not so supported. Second, the study team assessed whether all the proposed activities could be performed within the 18 month grant period. Each activity that could be completed within the grant period was given one point. One point was subtracted for each activity that could not be completed. Third, the study team determined whether proposed short-term outcomes could be achieved within the 18 month grant period. Each short-term outcome that could be achieved within the grant period was given one point. One point was subtracted for each short-term outcome that could not be achieved. Fourth, the study team determined whether there were outcomes (either long-term or short-term) for the two required objectives for the Cooperative Demonstration Program:

1. Access to quality vocational education training; and

2. A successful partnership between public and private sectors.

For each long-term or short-term outcome in the project design that matched a required outcome or a desired outcome, the design was assigned one point.

Projects were considered "plausible" if they met all four conditions. Projects that did not meet all four conditions were considered "less plausible" rather than "not plausible" since it cannot be determined absolutely whether the scores are a result of information missing from the application or are an actual lack of planning on the part of the applicant.

Results of the Plausibility Assessment

The projects were scored on four criteria described above and the results are presented in Table 4. It was found that:

Table 4

RESULTS OF PROJECT PLAUSIBILITY

Project	Sufficient Resources	Sufficient Time for Activities	Sufficient Time for Short-Term Outcomes	Access to Training	Public/Private Partnership	Total
Division of Vocational Education Services State Department of Education Montgomery, Alabama	–	+	+		+	+3
Skyline College San Bruno, California	–	+	+		+	+3
Ventura Community College District Moorpark College Moorpark, California	+	+	+		+	+4
Valencia Community College Orlando, Florida (manufacturing)	+	+	+		+	+4
Valencia Community College Orlando, Florida (film)	+	+	–		+	+3
Parkland College Champaign, Illinois	+	+	+		–	+3
Waubonsee Community College Sugar Grove, Illinois	+	+	+		–	+3
Indian Hills Community College Ottumwa, Iowa	–	–	+		+	+2
Hampden County Employment and Training Consortium Springfield, Massachusetts	–	+	+		+	+3
Central Community College—Platte Campus Columbus, Nebraska	+	–	–		–	+1
Postsecondary Vocational-Technical Education Concord, New Hampshire	–	+	+		+	+3

(Continued on next page)

Table 4, (Continued)

Project	Sufficient Resources	Sufficient Time for Activities	Sufficient Time for Short-Term Outcomes	Access to Training	Public/Private Partnership	Total
Southern Growth Policies Board Research Triangle Park, North Carolina	–	+	+		–	+2
University of North Dakota—Lake Region Devils Lake, North Dakota	–	+	+		–	+2
Toledo Public Schools Toledo, Ohio	–	+	+		+	+3
Francis Tuttle Vocation al Technical Center Oklahoma City, Oklahoma	–	+	+		+	+3
Portland Community College Portland, Oregon	+	+	+		+	+4
Northampton Community College Bethlehem, Pennsylvania	+	+	+		+	+4
Indiana University of Pennsylvania Indiana, Pennsylvania	–	+	+		–	+2
Greenville Technical College Greenville, South Carolina	–	+	+		+	+3
El Paso Community College El Paso, Texas	–	–	+		–	+1
Richland School District Kennewick, Washington	–	+	+		+	+3
Yakima Valley Community College Yakima, Washington	–	+	+		+	+3
University of Wisconsin—Stout Menomonie, Wisconsin	–	+	+		–	+2

- Eight projects appeared to allocate sufficient resources to conduct the activities;
- 21 projects appeared able to complete the proposed activities within the 18-month time frame;
- 21 projects appeared able to achieve the short-term outcomes within the 18-month time frame; and
- 15 projects met the required objectives of the Program: access to training and a successful partnership.

Analysis of the Plausibility Assessment. As displayed in Table 5, four projects were scored as "highly plausible", twelve were scored as "plausible", and seven were scored as "less plausible".

Projects were rated highly plausible if they allocated sufficient resources for conducting the project, proposed activities and short-term outcomes that could be achieved in the 18-month time frame, and met both required objectives for the Cooperative Demonstration Program.

Valencia Community College (manufacturing), for example, met all four conditions. It proposed to train over 500 students in eighteen months. To achieve this, the project focused on recruitment (e.g., assigning a staff member to serve as a on-site counselor for students), adapting existing course curriculum to meet the needs of students, and matching curriculum to industry requirements.

In contrast, projects receiving a low plausibility rating met only one of the four conditions. Five out of six projects receiving a low rating did so because of insufficient resources to conduct the activities proposed, while four out of six projects received a low rating because they did not meet both of the required objectives of the Program.

The most common failure of projects was lack of sufficient resources to conduct all project activities and achieve the outcomes proposed. If this condition is relaxed, at least 14 projects are rated

Table 5

SUMMARY OF PROJECT PLAUSIBILITY

Highly Plausible	Plausible	Less Plausible	
Meets all four conditions	Meets three conditions	Meets two conditions	Meets one condition
Valencia Community College (manufacturing)	Division of Vocational Education Services	Southern Growth Policies Board	Central Community College—Platte Campus
Portland Community College	Skyline College	University of North Dakota—Lake Region	El Paso Community College
NorthHampton Community College	Valencia Community College (film)	Indiana University of Pennsylvania	
Ventura Community College District	Parkland College	University of Wisconsin—Stout	
	Hampden County Employment and Training Consortium	Indian Hills Community College	
	Postsecondary Vocational Technical Education		
	Toledo Public Schools		
	Francis Tuttle Vocational Technical Center		
	Greenville Technical College		
	Richland School District		
	Yakima Valley Community College		
	Waubonsee Community College		

as highly plausible rather than only four projects. Although a required objective, only sixteen projects were rated as clearly intending to develop or maintain a partnership. Twenty-two were identified as providing training.

C. Summary of Evaluability Assessment

In this section, 23 FY1988 projects were assessed on the logic and plausibility of their project design as stated in their grant applications. Project logic was used as an indicator of the "clarity" of the project design, while plausibility was used as an indicator of the "coherence." It is assumed that both project logic and plausibility are important predictors of project success and the ability to measure that success. Most projects received a different ranking on logic than they did on plausibility. Table 6 shows the logic and plausibility rating for each project, and ranks the project.

For a project to have a good chance of success, it must be both logical and plausibile. A project with a high combined rating will be likely to accomplish the outcomes and activities stated in its application. Projects receiving a low rating in either plausibility or logic are less likely to be successful. Projects receiving mid-range ratings in logic, plausibility, or both, are rated as potentially successful. Taking both factors into account, three projects were predicted to be successful; ten projects were predicted to be potentially successful; and ten projects were less likely to be successful (see Figure 4). For example, Valencia Community College (manufacturing) and Ventura Community College District were both predicted to be successful projects from the evaluability assessment. Each received a high rating in both logic and plausibility.

The extent to which logic and plausibility can be used as predictors of the success of the project can be tested by comparing the rankings developed here with the results of the implementation analysis and cost-benefit analysis conducted in the next two sections. The relationship of the evaluability assessment to project success is discussed in Section V.

Table 6

SUMMARY OF PROJECT LOGIC AND PLAUSIBILITY

Project	Project Logic	Project Plausibility
Valencia Community College Orlando, Florida (manfct)	High	High
Portland Community College Portland, Oregon	High	High
Ventura Community College District Moorpark College Moorpark, California	High	High
Waubonsee Community College Sugar Grove, Illinois	High	Medium
Francis Tuttle Vocational Technical Center Oklahoma City, Oklahoma	High	Medium
Richland School District Kennewick, Washington	High	Medium
Central Community College-Platte Campus Columbus, Nebraska	High	Low
Skyline College San Bruno, California	Medium	Medium
Valencia Community College Orlando, Florida (film)	Medium	Medium
Parkland College Champaign, Illinois	Medium	Medium
Hampden County Employment and Training Consortium Springfield, Massachusetts	Medium	Medium
Postsecondary Vocational-Technical Education Concord, New Hampshire	Medium	Medium

Table 6, (Continued)

Project	Project Logic	Project Plausibility
Toledo Public Schools Toledo, Ohio	Medium	Medium
Yakima Valley Community Yakima, Washington	Medium	Medium
Indiana University of Pennsylvania Indiana, Pennsylvania	Medium	Low
El Paso Community College El Paso, Texas	Medium	Low
University of North Dakota-Lake Region Devils Lake, North Dakota	Medium	Low
Indian Hills Community College Ottumwa, Iowa	Medium	Low
Northampton Community College Bethlehem, Pennsylvania	Low	High
Greenville Technical College Greenville, South Carolina	Low	Medium
Division of Vocational Education Services State Department of Education Montgomery, Alabama	Low	Medium
Southern Growth Policies Board Research Triangle Park, North Carolina	Low	Low
University of Wisconsin-Stout Menomonie, Wisconsin	Low	Low

Figure 4

PREDICTION FOR PROJECT SUCCESS

Project Logic	Project Plausibility		
	High	Medium	Low
High	3	3	1
Medium		7	4
Low	1	2	2

= predicted to be successful

= predicted to be somewhat successful

= predicted to be less successful

III. PROJECT IMPLEMENTATION

The second question answered by the evaluation is to what extent did the projects implement the activities they originally proposed? If the projects changed their activities, under what conditions were those changes made and what were the implications for project operations and accomplishments? Did the activities that were carried out meet project objectives as originally developed or as revised?

This section is organized into six parts. Part A describes the procedures for selecting sites and collecting data on project implementation. The evaluation utilized telephone surveys and site visits of a subset of eight of the 23 high technology projects. Part B discusses the implementation issues that provided the framework for the inquiry. Part C presents an overview of each of the projects surveyed and visited, and a discussion of project administration and partnerships. Part D discusses the content of the projects and the intermediate outcomes from the activities conducted, including student recruitment and assessment, training content, curriculum development, skill identification, and staff development. Part E addresses the concept of innovation in the projects and notes whether the projects endeavored to test new ideas or simply to replicate already proven concepts. Finally, Part F summarizes additional implementation issues requiring further attention in the Year 2 of the study.

A. Procedures

To analyze implementation, the study team: 1) refined a set of implementation issues outlined in its technical proposal; 2) selected nine sites for further study through a preliminary "evaluability assessment;" 3) conducted a telephone survey of the nine grantees; and 4) conducted site visits to eight of the nine grantees. The team conducted these steps as quickly as possible because the evaluation contract began in March, 1990, only three months before the FY1988

grant periods ended. The survey and site visits had to be complete prior to the end of the projects' grant periods in June, 1990--insufficient time to use a full-scale evaluability assessment to select sites. Instead, sites were selected through a preliminary evaluability assessment. First, applications were ranked "high" or "low" according to three criteria: 1) the clarity of project objectives and outcomes, 2) the precision with which project activities were described, and 3) the extent of the project's focus on high technology. Second, the applications were divided into two groups based on total rankings. Within each group, projects with "low" rankings on high technology were eliminated. Finally, projects were selected from both groups so that they varied with respect to project focus (training, curriculum development, dissemination, etc.) as well as with respect to technology fields, the number of activity sites, and the number of participants.

The final list of nine projects is presented in Table 7. Eight projects were included in both the telephone survey and site visits. The ninth, Francis Tuttle Vocational Education Center, was included in the telephone survey but was designated an alternate site if one of the other eight sites became unavailable. The more systematic and intensive evaluability assessment (described in Section II) arrived at different rankings.

The short time frame necessitated switching from mail to telephone surveys. Questions were open-ended and were intended to collect information about project startup, changes in levels and types of services provided, and changes in expected outcomes. The survey obtained preliminary information and was followed up in the site visits. It was not, however, used as a pilot test for a survey of FY1989 grantees as originally planned. The site visits were conducted during May, June, and July, 1990, by members of the study team.

Table 7

FY1988 GRANTEES SELECTED FOR THE SURVEY AND SITE VISITS

GRANTEE	PROJECT	START DATE	END DATE	SURVEY	VISIT
Skyline College San Bruno, California	Toyota/Skyline Partnership for Automotive Technician Training	Dec. 1988	May 1990	Yes	Yes
Ventura Com. College Dist. Moorpark College Moorpark, California	Non-college Bound Student Demonstration Project - Electronics/Laser/Electro-optics	Jan. 1989	Aug. 1990	Yes	Yes
Valencia Community College Orlando, Florida	A Model, Replicable Advanced Manufacturing Demonstration Project	Jan. 1989	June 1990	Yes	Yes
Valencia Community College Orlando, Florida	Film Production Technology Training Program	Jan. 1989	June 1990	Yes	Yes
Francis Tuttle Vocational Technical Center Oklahoma City, Oklahoma	High Technology Partnership Project	Jan. 1989	June 1990	Yes	No
Northampton Community College Bethlehem, Pennsylvania	Turn-key Surface Mount Training Program	Jan. 1989	June 1990	Yes	Yes
Indian University of Pennsylvania Indiana, Pennsylvania	Northwestern Pennsylvania Cooperative Demonstration for Technical Updating	Jan. 1989	June 1990	Yes	Yes
Richland School District Kennewick, Washington	Materials Technology: The Common Core Skills That Are Shaping the Future	Jan. 1989	June 1990	Yes	Yes
University of Wisconsin-Stout Menomonie, Wisconsin	Implementing a High-Tech Training Model for Rural Based Business and Industry, Technical Colleges, and Local and State Education Agencies	Jan. 1989	Aug. 1990	Yes	Yes

B. The Framework for the Implementation Study

Early in the project, the study team identified questions to collect information on project administration, operations, intermediate outcomes and extent/kinds of innovation. These issues provided the framework for the telephone survey and site visits. They are briefly summarized here.

PROJECT ADMINISTRATION:

1. Project Infrastructure: To what extent did the project succeed in establishing the infrastructure to carry out its activities? Among the specific items that were examined were staffing, obtaining needed space, acquiring equipment, keeping track of funds, students, and other necessary recordkeeping, scheduling services, conducting evaluations, and seeking additional support (if needed). Did the extent to which the project was new to the grantee influence its ability to carry out infrastructure development? What other factors influenced success in project administration?

2. Partnership Role: What kinds of partnerships were established--i.e., what was the range of partner types, what roles did partners play in project activities, what was the extent of partner involvement? To what extent did the roles played by the partners reflect the range of partnership roles identified in the legislation? Were particular kinds of partnerships more or less capable of being implemented successfully?

3. Start-up Activities: What activities were undertaken in preparation for providing direct services to students or other clients? How long was the start-up phase? Assuming a main activity was student training, to what extent did projects identify employer needs or available job openings, develop student assessment techniques, adapt/adopt curricula developed prior to the project, obtain clearances or other approvals in order to offer training, or train instructional staff? Assuming a main activity was curriculum

development, to what extent did the project identify needed skills, encourage industry or other reviews of materials, or pretest materials? If projects planned to coordinate a set of services, to what extent were other service agencies enlisted in service provision or other activities mounted?

4. Student Recruitment: What activities were mounted, who was involved and for what percentages of their time? What, if any, incentives were there for students to enroll?

5. Dissemination: As these were demonstration projects, what activities were planned to disseminate project materials, findings, models, etc. and were those activities implemented?

PROJECT OPERATION:

Once beyond the start-up, how did the project operate? What kinds and amounts of training or other direct services were provided to students or other project clients? What problems were encountered and how were they addressed? The evaluation attempted to describe the nature of the service and develop a means to quantify the amounts of service.

INTERMEDIATE OUTCOMES:

With respect to training, how many students or other clients received services and how much service did a typical client receive? What were the characteristics of clients with respect to common descriptors such as sex, race, ethnicity, age, educational background and the like? To what extent did students complete the training or other service in which they were enrolled? With respect to curriculum development, what curricula were developed and how successful was their implementation? How was information on job or skill needs incorporated into course development? How were curricula assessed? With respect to partnerships or other linkages, were they formed and what did they contribute to the project?

INNOVATION:

> Since these projects were intended as demonstrations, did they try new approaches and, if so, what can be learned from studying them?

These, then, were the questions that guided the inquiry. The next part describes what was learned from the survey and site visits.

C. Implementation Findings

This part reports on implementation findings from the analysis of the survey and case studies.[1] With only eight projects, it is difficult to generalize to all high-tech projects supported through the Cooperative Demonstration Program.

1. Overview of the Projects

The following paragraphs present a brief overview of the plans and activities of each project, noting the original design, the primary activities carried out, how they differed from the plan, as well as major project outcomes.

Richland School District: The original plan, largely implemented, was to introduce a one-year course in materials science and technology (MST) to seven high schools and one community college. The MST course curriculum had already been developed by a teacher at Richland High School with support and technical assistance from Battelle Northwest Laboratories (the private partner). The course was a 180-hour, hands-on, science and vocational course about glass, ceramics, metals, composites, and wood. Two teachers from each of the seven high schools were trained in a three and a half week summer workshop. They adapted the MST outline and workbook to their own school and local needs, and trained 237 students during the 1989-90 school year. One site dropped out at the mid-year point because of school construction and staff turnover.

Northampton Community College: The National Training Center for Microelectronics at NCC proposed to provide local manufacturing companies (the private partners) with customized job training in surface mount technology (SMT). During the grant period, the Center expanded its existing training program in SMT, enhancing four existing courses, creating seven new courses, acquiring new equipment, and

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[1] As appropriate, the report also references information from the Francis Tuttle Vo-Tech Center collected during the telephone survey.

producing a national teleconference. The project trained 233 employees of seven microelectronics firms during the grant period at reduced or no cost to the companies. The project also reached an estimated 2000 employees at 18 locations nationwide through two four-hour teleconferences, one of which was interactive. The subject of the conferences was "Packaging in the 1990s," and videotapes of the teleconference were sold to private companies and donated to other universities. The project was generally implemented as proposed, but trained only about half as many students as planned because companies enrolled fewer students than predicted.

Valencia Community College [film]: The VCC staff established as proposed a film production technology program to train students for jobs in the growing local film industry. With technical support from Universal Studios (the private partner), VCC developed the program's curriculum and implemented a 15-week course offered three times during the grant. A total of 135 students were trained in stagecraft, sound, set construction, camera/editing, and post production. Together, the three sessions produced a full-length feature film entitled "Sealed With A Kiss." The project was implemented as outlined in its application.

Valencia Community College [mfg.]: VCC proposed providing a local manufacturing company with customized job training in automated manufacturing technology. VCC was already working with Stromberg-Carlson, Inc. (the private partner) under a State of Florida grant to help Stromberg-Carlson introduce high technology-based manufacturing processes. During the Cooperative Demonstration Program grant, VCC trained 565 Stromberg-Carlson employees with the curriculum designed under the earlier grant. A total of 26 classes were offered in 17 different courses; the courses averaged 65 student contact hours. The project was implemented as proposed, although 30 percent of the students dropped out prior to graduation due to other demands on their time.

University of Wisconsin-Stout: The project proposed implementing a "model" high technology training program in three technical colleges

and 12 high schools in University of Wisconsin-Stout's service area. Project staff conducted an initial four-week summer workshop and trained teachers from the participating secondary schools and postsecondary technical institutes how to conduct local needs analyses and to develop module curriculum. Teachers at each school interviewed local industry officials to determine high-tech training and skill needs and to develop course modules. Teachers spent the 1989-90 school year preparing their module(s) and testing them in classes. The project planned to complete 41 modules--ranging from a few hours to a full semester of instruction. The project was implemented as proposed except that teachers at the participating technical colleges did not have time to begin training employees of the private sector partners.

Skyline Community College: The vocational division at the college proposed a joint training program for service technicians with Toyota Motors Sales (the private partner). The program, called T-TEN, included 16 weeks of formal instruction per year for three years and part-time work at a reduced wage in Toyota dealerships. Toyota provides financial incentives to the college and to students for implementing and graduating from the program. The project was underway, with state financing, prior to the Cooperative Demonstration Program grant. Potential students were recruited through newspaper ads and selected by dealership personnel during an annual meeting. The College began the process of obtaining national certification (NATEF) for its automotive program. At the end of two years, a total of 17 students were enrolled in the program and two Skyline instructors had received extensive Toyota training and developed the training curriculum using Toyota materials. The project was largely implemented as planned, except 1) there were fewer participants because there were fewer job opportunities with Toyota dealerships, and 2) most students ended up working full-time because they needed the money and dealers needed the staff.

Moorpark Community College: The original plan was to establish a coordinated high school-college program in electronics and laser/electro-optics for at risk students in eight high schools. In

addition, the local business/labor council (BLC--the private partner) would arrange for field trips to potential employers, transportation among sites, counseling, and other activities. The project curriculum was to be developed at the college. The initial plan was modified considerably over the grant period: 1) a summer remedial basic skills program was not held, 2) high school instructors received informal training from the college as needed to implement the program, 3) planned inter-school transportation was simplified, and 4) the BLC role diminished substantially. As jobs in laser-optics decreased, college attendance became a more likely student outcome. In the end, however, the schools adopted the college-developed program. Fifty-two students from eight high schools completed the coordinated instructional program, and more are now enrolled in the College. Students received instruction at four of the schools for four days a week and at Moorpark one day a week.

Indiana University: The initial goals of this project were ambitious--to establish collaborative technical training between Indiana University, county vocational schools, other postsecondary institutions, private trade schools, regional economic development agencies, and the private sector. Problems in coordinating with the regional economic development agency, however, scaled back project goals. In the end, the project delivered a variety of short-term training programs to the employees of smaller manufacturing and other firms in the area (the private partners) at no cost to the companies or employees. Courses varied from basic math to the use of sophisticated computer controlled machinery. Most courses were offered by the county vocational schools and approximately 648 students received training or attended product demonstrations. Thirty-three classes were organized.

Francis Tuttle Vocational-Technical Center: (telephone survey only): The goal of this project was to increase enrollment in the High Tech Center within the institution by providing academic remediation to adults who would not otherwise qualify, and to extend formal instruction with internships. This project was largely implemented as planned. A recruitment campaign was undertaken and a self-paced

learning lab installed. To attract students, the project provided tuition reimbursement for 220 students without regard to financial need. Eighty percent of the Center's students used the lab. Internships with stipends paid from the grant were provided to 20 students (sites were the private partners). The project recorded a substantial increase in enrollments and a dropout rate of 30 percent.

2. Project Administration

Timing of Award: Applicants suddenly awarded grants may suffer timing problems. In the first year of the Program, application materials mentioned an October 1988 award date, but applicants were not notified of awards until October 1988 and began their projects at their convenience after that. All but one visited projects began spending funds in January 1989, but most indicated that the timing of award notification was difficult. Most grantees were academic institutions operating on a 9-month academic year that had begun in September. By the time the grants started, almost half their potential "planning" year was over. Notification in the fall would have allowed an eight month period in which all school personnel were readily available. Furthermore, had the grant award started early in the academic year, project activities could have been incorporated into the overall planning activities of the grantee organization.

Projects that were already involved in the activities for which Federal support was sought were better able to accommodate the mid-year start date. Three projects (Richland, Valencia [film] and Valencia [mfg.]) were already training students or had undertaken extensive planning before the grant began. Three other projects (University of Wisconsin-Stout, Skyline, and Northampton) were actively planning before the grant started although some of these projects still encountered start-up difficulties.

The grantees most affected by lack of time were those beginning new enterprises with the awards. At Moorpark, for example, most curriculum development and teacher preparation activities were carried out during the Summer of 1989 and many adjustments in operations were

made after students were already attending classes. When problems arose in the Spring of 1989 with the partnership arrangement at Indiana University, there was not enough time to rethink the design before actual training begun.

Hiring Staff: Most projects did not plan to hire new staff in key positions; of those that planned to, few succeeded. Project administrators blamed the timing of awards, and the 18-month time frame. Recruiting and hiring took several months, and some positions went unfilled. Grantees had to prepare job descriptions, post notices, interview candidates, and negotiate the terms of employment. In two projects, people had been provisionally recruited to run the projects in the Fall of 1988, but by the time the grants started and the institution's hiring procedures had been met, the individuals had taken other jobs. These projects decided not to fill the position with new hires either because no qualified candidate would take the position for only 18 months (or less by the time the recruitment procedures were fulfilled) or because the grantee did not want to incur the long-term responsibility for employment after the grant ended. In both cases, project director responsibilities were divided among existing staff.

Several projects shifted responsibilities back and forth among staff members over the project period and had not achieved a staffing "groove" until the grant was ending. This was most apparent in projects that sought new hires, but was also a problem in projects in which in-house personnel had taken new jobs or other staffing changes had been made between submitting applications and beginning the grants. Several projects had 20 or more people working on the grant-funded activity part-time or by-the-course basis, unlikely to facilitate the continuation of the project after the grant period. Institutions accommodate "soft money" grants into their operations by ensuring it is spent on personnel for whom no long-term commitment exists. This approach mitigates against project continuation when the grant ends.

Purchasing Equipment: Most projects perceived that grants could not be used to purchase equipment, although there was no outright restriction on such expenditures in the first year grant awards. This

probably reduced such purchases. Several projects, however, spent staff effort to find other ways to fund equipment. One project shifted another grant to equipment support when the Federal funds were awarded, but others used what they had sought donations from employers, or did without.

Establishing Private Partnerships: "Partner" had different meanings among projects. In most cases, the "partner" was a private employer enlisted by the public grantee. In one case, the private partner was a nonprofit consortium of businesses and labor organizations. In another case, the private partner was a nonprofit research organization that developed a curriculum in conjunction with a school district. One project had no real partnership with the private sector other than having teachers interview local businesspersons.

Most private partners played limited and conventional roles such as offering one-time or periodic advice on curriculum development, serving project advisory committees, identifying marketable skills, or donating equipment and materials from local businesses (sometimes in exchange for training employees). In a few cases, businesses were identified as partners if they might be willing to hire project graduates (Table 8).

Three of the eight visited projects were customized training programs for employees of "partner" companies (Valencia [mfg.], Northampton Community College, and Indiana University); the University of Wisconsin-Stout planned to provide such training but ran out of time. Customized training programs enlisted employers (partners), and "sold" them low or no cost training services, often with the hope that the partner would pay for comparable services after the grant period. Two projects provided broader training programs--Skyline Community College for persons seeking employment in Toyota auto dealerships and Valencia [film] for people wanting jobs in Universal Studios, but neither guaranteed employment to graduate. Two projects--Moorpark Community College and Richland School District offered one-year introductory programs for high school students in particular high technology fields but not for specific employers.

Table 8

PARTNERSHIP DEVELOPMENT

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o partnerships with secondary and votech schools	o cooperative agreements with 16 secondary and post secondary schools o local partnerships w/bus.		o high tech training model included partnerships
Moorpark	o Private Industry Council provides training funds o other companies purchase training	o cooperative agreement with Business and Labor Council o cooperative agreement with Ventura high schools		o other companies donated $10,000 in equipment
Skyline	o be identified with major employer o enlist dealerships o NATEF certification	o cooperative agreement with Toyota o enlisted 11 dealerships o NATEF certification	o 11 dealers not enlisted	o Toyota excluded certain dealerships
Valencia [mfg.]	o partnership with Stromberg Carlson	o new partnership with Stromberg-Carlson o other companies contributed hardware & software		o existing Stromberg Carlson staff training program
Valencia [film]	o partnership with Universal Studios	o new partnership with Universal Studios o US allowed access to its vendors		o previous working relationship with US o vendors sold equipment at reduced prices
Northampton	o solicit companies for training o teleconference with industry, colleges, assoc.	o renewed partnerships with previous corporate clients o partnered with teleconf. groups		
Indiana Univ.	o develop and outreach program o 22 partners	o existing mandate to serve area vocational schools o offered training cheaper than private schools	o partnership with economic development agency failed o little recruitment of firms	o private industry visited demos or were provided training
Richland	o create new partnerships with secondary and post-secondary schools	o continued existing partnership with Battelle o new agreements with 7 districts & 1 comm. col.	o 1 school dropped out mid-year due to construction and staff turnover	o Battelle paid for curric. development o schools contrib. $ o CWU helps curriculum

The private sector initiated two projects. The Skyline College program was originally developed by Toyota, which had approached Skyline with the idea. The college was one of 50 sites nationwide. The Toyota program is representative of partnerships undertaken by both U.S. and Japanese car manufacturers to improve the training of service personnel. In Richland School District, the private sector partner, Battelle Northwest Laboratories, had sponsored curriculum development as part of a U.S. Department of Energy contract.

Partnerships roles that emerged from the sites in the case studies included:

- Partner as customer (customized training);
- Partner as advisor board of directors--sometimes consulted on curriculum, but not always;
- Partner as supplier of resources--such as equipment;
- Partner as instructor; and
- Partner as initiator of the relationship or project.

These categories are not exclusive.

Other Partnerships: Some projects enhanced "partnerships" among educational institutions. Joint arrangements between secondary school districts and postsecondary institutions were common. For example, Moorpark Community College established a relationship with four school districts to implement an integrated high school laser-optics curriculum. The University of Wisconsin-Stout trained high school teachers and worked with them designing and testing curriculum modules. Indiana University tried to strengthen the capacity of area vocational institutions to serve private employers. For some teacher training institutions these "partnerships" are part of ongoing programs; for others, such as Moorpark, they were the result of the grant award.

Other Start-up Activities: At the outset, the study team identified several activities likely to occur during the project start-up, including recruiting students, adapting curricula, establishing management information systems, obtaining necessary approvals for course offerings, identifying jobs, and conducting public relations activities.

Some projects engaged in elaborate student recruitment efforts, depending on whom the projects planned to attract. Projects that planned to recruit new students from less-advantaged populations invested more heavily in recruitment. Those that planned to train current employees of a single "partner" or students already enrolled in the grantee institution made less effort to recruit. One customized training program recruited employers who were interested in training employees and then spent time selling the idea to the workers. The two projects that offered training that might lead to employment in a particular industry (Skyline and Valencia [film]) appear to have spent the greatest time on recruitment. Table 9 shows the major accomplishments of the eight projects with respect to recruiting students for training by either the project staff or the partner organization(s).

The other start-up activities were less frequent. Few projects introduced management information systems; most either used information systems already in place or did not collect systematic information. Obtaining reliable information on numbers of students served, amounts of service, and compiling financial data were difficult.

One project encountered start-up problems when a private partner could not provide promised placements for enrollees. Another project found that its plan to gain access to private employers through an economic development agency no longer viable and new links needed to establish.

Table 9

STUDENT RECRUITMENT

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o left to participating schools	o recruited 45 instructors o voluntary registration for classes o recruited 450 students		
Moorpark	o produce press releases o present speeches to potential students o sponsor workshops	o recruited 85 students o counselors assigned students to class		o each school handled own recruitment
Skyline	o recruit 20 students for each of three sessions o develop brochures	o recruited 200 students o received 50 applications after initial orientation		o used newspaper ads o 12 students hired by Toyota
Valencia [mfg.]	o recruit 465 students	o recruited 565 students o students were employees assigned to training by supervisor		
Valencia [film]	o prepare and circulate announcements of program o recruit 120 students	o sent out brochures to media, unions, industry o 3024 applications o accepted 163 students		o required students to have basic skills
Northampton	o recruit companies for training o recruit 480 students	o contacted local industry o recruited 233 students o students were employees assigned to training	o companies recruited fewer than 15 students per course	o 2000 students watched teleconference
Indiana Univ.	o SPIRC recruit firms for training	o students already employees of companies; assigned to training by supervisor o ATVS recruited firms	o recruited fewer firms	o partner to do recruiting but failed
Richland	o recruit 250 students	o distributed brochures o recruited 237 students o voluntary registration for classes	o 13 students short of goal	o each school was responsible for recruitment

D. Project Content and Intermediate Outcomes

Projects emphasize one or more of four different activities, each with different outcomes: 1) technical training with the aim of job placement or upgrading, 2) development of curricula to meet identified skills needs, 3) testing and dissemination of previously-developed curricula, and 4) inservice training aimed at developing new courses.

Direct training services to students: All visited projects emphasized vocational or technical training, but the amount and duration of training varied. For example, Skyline Community College provided each of its students with 16 weeks of full-time automotive mechanics training per year for two years and planned to offer a third year for students to complete the program. Francis Tuttle provided more than 2,000 hours of training over 24 months. On the other hand, some of Northampton's training modules in surface mount technology provided students with only a few days of training. In some projects with extensive training--such as Francis Tuttle and Moorpark--Federal grant funds were supplemented by the grantee institution or the partner organization.

The role of training varied. In two cases, training was provided to test new curricula. For example, a goal at Richland was to disseminate a new curriculum in materials technology, whereas at Northampton training was used primarily to test and refine curricula. These differences in goals and intentions make cross-site comparisons of amounts and duration of training in relation to resources difficult, if not questionable.

Respondents were asked what students might expect if they completed training. The most common "reward" was a vocational certificate (Richland, Skyline (certificate of journeyman status), Indiana University, and Francis Tuttle). Francis Tuttle indicated it was establishing a relationship with a community college to allow graduates to receive an associate degree. Moorpark and Northampton indicated that students would obtain college or continuing education credits.

Grantee applications indicated that programs developed under the grant would guarantee completers new jobs or promotions; Moorpark, Richland, Valencia [film], Skyline, and Francis Tuttle said that students would be likely to gain such benefits. Richland (the students at Columbia Basin Community College), Valencia [mfg.], Northampton, University of Wisconsin-Stout, and Indiana University indicated promotion or salary review was likely.

Most projects provided short-term training separate from regular offerings, although a few tried to develop new components to ongoing programs. The emphasis on customized training is itself an indication of the short-term focus, and such add-ons tend to disappear when the funds end. Table 10 shows the major training activities and accomplishments of the eight projects. In Year 2 of the study, the evaluation will explore how the grant program design framework contributes to project design.

Curriculum Development: All but one of the projects engaged in formal curriculum development and at four projects this was a major focus of the grant. Northampton developed 11 new training modules and "polished" several others; Richland is developing a curriculum guidebook to disseminate; and Moorpark developed a curriculum for simultaneous use in high schools and the college, and modified the curriculum as a result of teacher feedback. Table 11 shows the major curriculum development activities and accomplishments of the eight projects.

Despite heavy emphasis on curriculum development, projects sought systematic teacher feedback. Almost none of the projects reviewed the curriculum prior to its introduction and none established a means of determining effectiveness in the classroom. One project simply packaged and distributed the "modules" developed by teachers who participated in an inservice training workshop. The granting agency should insist on more vigorous curriculum evaluation for curriculum development projects funded in the future.

Staff Development: Few of the projects emphasized staff development--probably because grants were demonstrations (staff

Table 10

STUDENT TRAINING

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o train 50 employees o orient 1000 K-12 students o orient 300 post-secondary students	o 450 students trained o 1032 hours of instruction	o 50 employees not trained	
Moorpark	o offer remedial instruction o offer introductory courses	o 85 students trained o 23,936 hours of training	o 3 students dropped out	
Skyline	o offer instruction for four sessions o coordinate work experience session	o 17 students trained o 21,760 hours of training o 200 students trained in job hunting skills	o 51 students dropped out	o no promise of jobs o all male o problems with schedule & dealer recruitment
Valencia [mfg.]	o train 465 students o offer 18 courses	o 392 students trained o 26 classes/17 courses offered	o 173 students dropped out	o 19% minority o 49% female
Valencia [film]	o train 120 students	o 135 students trained o 756 hours of training each	o 28 students dropped out	o three sessions of three months each
Northampton	o train 480 students	o 233 students trained o 20,136 hours training o 2000 trained by teleconference	o 247 short of goal for local training	o 72% of students rated courses excellent o teleconference involved 32 sites
Indiana Univ.	o provide skill updating workshops	o 648 students trained o 12,960 hours training o 33 courses offered		o end-of-course survey showed most students satisfied
Richland	o train 250 students	o 237 students trained (217 high school, 20 college) o 42,660 hours of training	o 13+ not trained	o school remodeling and turnover stopped class o administrators positive about course

Table 11

CURRICULUM DEVELOPMENT

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o develop curriculum materials for elem/secondary and post-secondary schools	o 24 new course modules developed	o 10 new course modules pending o 3 course modules not completed	o time conflicts on the part of instructor
Moorpark	o none	o modified existing course curriculum		o developed coordinated curriculum between college and 4 high schools
Skyline	o finalize curriculum o prepare course materials o develop learning objectives	o developed new tests and labsheets for course o 500 manhours across 7 courses		o use Toyota manuals as texts
Valencia (mfg.)	o design training curriculum	o development of some new materials		o accomplished prior to COOP grant using $ from state grant o used standard textbooks
Valencia (film)	o develop film production program o design and develop curriculum	o developed new curriculum in five film areas		o accomplished prior to COOP grant using $ from state grant o visited other projects
Northampton	o make site specific modifications to training modules	o 7 new courses developed o 4 courses upgraded		o 2 courses approved for college credit as part of electronics program
Indiana Univ.	o supply instructors with appropriate teaching materials	o some modification of course for coopdemo students		o used existing curricula o student knowledge and abilities varied widely
Richland	o tailoring of outline to local labor market	o formalized previously developed curriculum into handbook and experiments		o short time frame o college approval process difficult

development tends to be an ongoing activity with an inherently local focus). One project was primarily a staff development project, bringing together secondary and postsecondary instructors and helping them learn how to construct training modules in new fields. This project was effectively "testing" a model in which teachers develop curricula through information provided in workshops. One project disseminated curriculum by training teachers in its use.

Nonetheless, most projects offered some type of staff training, although the amounts of varied. Three projects that introduced new curricula (Richland, Skyline, and Northampton) provided intensive teacher training. Francis Tuttle trained staff to assess students' basic skills and to teach reading and math skills in a learning lab. Valencia [film] and Valencia [mfg.] both indicated that some staff development had taken place prior to the Federal grant. Moorpark conducted no formal staff development, but there was informal teacher training and teacher-counselor interaction, including a bimonthly meeting. Indiana University offered no staff development directly, although instructors spent their own time in curriculum development. Table 12 shows the major activities and accomplishments of the eight projects with respect to staff development or staff training.

Curriculum or Other Dissemination: All projects had plans to disseminate their findings, but only one made dissemination a major emphasis. Richland's was primarily a dissemination project: the Materials Science Technologies course was already operating in the Richland school district and the project sought to disseminate it more widely. The grant was used to replicate the course and adapt it to the needs of educators and local labor markets. Other project directors made presentations at regional (or national) vocational education conferences and spread information to community colleges via association meetings and conferences. Northampton's project director gave lectures and wrote articles for trade journals. Three of the projects (Valencia [film], Valencia [mfg.], and University of Wisconsin-Stout) indicated that the Federal grant allowed them

Table 12

STAFF DEVELOPMENT/TRAINING

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o in-service training for 50 K-12 and post secondary teachers	o 50 instructors trained o 40 hours of training each		
Moorpark	o none	o 3 instructors trained o 120 hours of training each		o extensive assistance to participating high school instructors
Skyline	o instructors participate in Toyota advanced training o assign instructors	o 7 staff trained, 2 intensively o 200 hours of training		
Valencia [mfg.]	o none	o none		o accomplished prior to COOP grant using $ from state grant
Valencia [film]	o none	o none		
Northampton	o none	o seminar for SMT trainers		
Indiana Univ.	o none	o none		
Richland	o provide teacher training	o 15 instructors trained o 160 hours of training each		o orientation session o 3.5 week summer workshop o 2 1-day follow-ups

to help other educational institutions replicate their program. Table 13 shows the major accomplishments of the eight projects with respect to the dissemination of the design, content, instructional materials or knowledge of the project to other vocational education institutions.

Skills Identification: In their applications, a number of projects planned to identify vocational and/or academic skills needed in particular occupations, usually where qualified workers were in short supply. Based upon the skills identified, they planned curriculum development, assessments of individual skills (prior to or after training), and student recruitment and training.

In fact, few projects achieved these goals. Business representatives on advisory councils were often consulted about what skills they thought were needed, local employers who were not project partners were contacted to find out what sort of training they demanded. Of the nine projects, one project surveyed local businesses and industries, and another conducted a literature review to identify skills. Table 14 shows the major activities and accomplishments of the eight projects with respect to the identification of high technology or other skills that students should learn through the project.

Other project activities: Seven projects (Moorpark, Valencia [film], Valencia [mfg.], University of Wisconsin-Stout, Skyline, Northampton, and Francis Tuttle) indicated that they carried out assessments of student abilities. Two projects (Valencia [film], Valencia [mfg.]) had developed the procedures for conducting the student assessments before receiving the Federal grant, while Skyline, University of Wisconsin-Stout, and Francis Tuttle began assessment activities after receiving the grant. Francis Tuttle, Valencia [film], and Moorpark administered pre-tests as part of their student assessment activity. Francis Tuttle indicated that students entering the institution are usually assessed, but not as extensively. Table 15 shows the major activities and accomplishments of the eight projects with respect to the assessment of students either before or after the training was provided.

Initial plans showed some projects intended to 1) assess students' skills as they begun the program to establish comprehensive individual student records, and 2) follow up completers. The study hoped to obtain exit achievement scores, subsequent education activities, and subsequent employment experiences of the graduates from projects with good student records and complete training cycles. Aside from overall numbers, however, few projects could supply information on the characteristics of students served by the grant.

E. Innovation In Projects

The purpose of a demonstration can be to either 1) prove that an idea of concept works, much like an experiment, or 2) show how something works or performs, much like a presentation. Whereas the first purpose implies the development and testing of new ideas, the latter purpose stresses replication of existing ideas in new contexts. Program regulations for the Cooperative Demonstration Program do not specify which of the two (or both) purposes is to be addressed by the grantees and applicants are free to select which emphasis they wish to pursue. This part describes two aspects of projects which may reflect the testing of new ideas: the high technology aspect of each project and the innovation, if any, in vocational education services.

1. Definition of High Technology

The "high technology" characteristics of the nine Cooperative Demonstration Grant projects varied. They included:

- Training designed to prepare students for jobs in fields generally held to be "high tech" in that they manufacture high technology products. The training itself might be sophisticated or basic and lead to entry-level jobs or to upgrading the skills of current workers. For example, an electronics course for high school students led to an entry-level placement in a laser optics manufacturing plant;

- Training to enable students to use high-tech equipment even though the field for which they are training is not generally considered to be high tech. Examples included training in the use of computer assisted drafting, automotive repair (which includes high-tech diagnostic and other equipment), film industry technicians;

- Training using computers regardless of the field for which training is received. For example, students in one program were trained

to use word processing packages and Lotus 1-2-3; and

- Training in basic skills as preparation for specific occupational training for a high technology field. In one project, postsecondary students who wished to enter training in a high tech field but who lacked adequate math skills were provided with remedial training; in another, secondary students were offered an introductory course in materials science technology.

All projects were not equally "high-tech." Not all training using computers was high-tech, unless the training also included learning about computers or using the computer to learn a high technology application. Remedial or other basic skills preparation not geared directly to preparation for high-tech jobs appear to be tangential (at best) to the intent of the Act. If this program is continued, Federal officials may wish to define high-tech fields they wish to involve in the training or the high technology activities they would permit.

2. Extent of Innovation

Although the FY1988 program regulations and application materials do not require projects to be innovative (nor is the term "innovative" even used), the study's Advisory Panel and staff felt that it was important for the demonstrations to advance the knowledge of the vocational education field by testing new ideas. At each project visited, the study team sought to understand what, if anything, the project saw as innovative or new in its offering. Much of what was observed during the site visit was hardly "cutting edge" with respect to instruction, partnership, supplementary or coordinated services, or serving special populations (as defined by the Perkins Act or otherwise).

The absence of innovation within and across projects might have been due to the absence of a priority for it in the regulations or points awarded for it in the scoring of applications. Lack of innovation might also be due to the short time frame of the grant--it

is hard to start and complete an innovative project in 18 months. Still, a few projects did manage to experiment with new designs, services, or partnerships.

One innovator was Moorpark College, who's project developed a model of cooperation among a community college and a group of high schools to promote technology achievement and career among low-achieving ("at-risk") students. Important elements of the project included:

- Constructing a curriculum and cooperating with high school teachers so that instruction in high schools and the community college were synchronized;
- Training teachers in the summer so they would feel comfortable with the curriculum, e.g., a math teacher learned about electronics;
- Enlisting the high school teachers in the community college instructional process and vice versa; and
- Using vocational interests as a means to teach academic skills (and informal vocational setting and approach as well).

At the same time, the project encountered difficulties that are often faced when institutions with different goals try to cooperate. The lessons learned include that:

- The college wanted "at-risk" students but some school districts instead sent their brightest--the result was a class composition at the community college that required a large amount of individual instruction and low achieving students was not always well served;
- Costs of moving students from high school to community college and back were great;
- There was no clear role for the private sector in this project as the opportunities

for jobs in laser optics failed to materialize and most students chose to attend community college after graduation. On the other hand, the project director reported that these students are remaining at the community college longer than students typically do and she attributes this to the "head start" they got in meeting the staff and feeling part of the institution; and

- The college and school districts involved purposely did not use vocational education teachers at two of the high schools because of "turf" issues. The other two schools did not have electronics programs so there was no issue. This does not bode well for efforts at vocational/academic integration that involve vocational high school instructors.

In light of current interest in using vocational education as a means to engender educational interest and teach basic skills, the Moorpark project might be worthy of further dissemination. Furthermore, the "hands-on" physics course created by Battelle and Richland School District is also worthy of attention, even though it was not developed under this grant.

Although some projects were not innovative, they benefitted those students involved. Most of the projects addressed needs in their communities--opening up job opportunities in growing fields, upgrading the skills of workers, exposing small manufacturing plants to the opportunities of using high technology equipment, and increasing the capacities of training institutions and their staff to deliver training in high technology fields. Project staff cited three kinds of beneficiaries: trainees, employers, and the institutions providing the training.

Finally, what do these projects teach us about public/private partnership as a means to foster training and innovation? Partner roles were limited. Several partnerships failed to live up to expectations. In at least three projects (Skyline, Indiana University, and Moorpark) the private partners appear to have made inflated

promises about what they could deliver.[2] When forced to deliver jobs or support services, they were unable to do so, putting these projects at risk.

[2] In the case of Indiana University, the private sector partner discussed here is the economic development agency--an organization developed by the state--which was supposed to link the institution to small manufacturers in the service area.

Table 13

DISSEMINATION

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o conduct 3 dissemination workshops o presentation at state mtg. o publish project newsletter	o presentations at national, regional, and state conferences o project newsletter		
Moorpark	o none	o presentation at state AACJC o presentation at state conference		
Skyline	o develop brochures, fliers, and advertisements o prepare articles for industry newsletters	o presentations at AACJC o presentation at state conference		o addressed promises and pitfalls of corporate sponsors
Valencia [mfg.]	o none	o presentations at national and state conferences o staff involved in state committees		
Valencia [film]	o none	o produced video tape for national distribution o submitted materials to ERIC		o pursuing possible commercial distribution
Northampton	o promote interactive teleconference o participate in state mtgs. o visit Pa. community coll.	o marketed courses to other companies o conducted national teleconference to 35 sites		o second teleconference not interactive
Indiana Univ.	o promote training via newsletters, brochures, etc.	o presentation at AVA o presentation at Penn. vocational education conf.		o poor turnout due to logistical setup
Richland	o prepare descriptive materials o make presentations o submit to dissem. network	o presentation at AVA o presentation at state mtg. o 2 magazine articles		o summer workshop after end of grant o possible publishing of notebook as textbook

Table 14

SKILLS IDENTIFICATION

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o conduct high-tech competency survey o identify new technological developments	o conducted 85 interviews with private industry o surveyed 285 local firms o reviewed literature		
Moorpark	o none	o obtained skill estimates from two local firms		
Skyline	o establish advisory committee	o worked with local dealers to identify skills		
Valencia [mfg.]	o assess training needs of industry	o none		o accomplished prior to grant
Valencia [film]	o assess training needs of Universal Studios	o none		o accomplished prior to COOP grant using $ from state grant
Northampton	o analyze company for module development	o done in cooperation with companies requesting the training		o electronic soldering o electronic manufacturing processes
Indiana Univ.	o perform inventory of skill development	o surveyed 4000 manufacturers o follow-up survey of 30 local firms		o quality control o computer controlled machinery
Richland	o to be done by local advisory committee	o done by local advisory committee		o course had already identified skills, need local modification

Table 15

STUDENT ASSESSMENT

PROJECT	PROPOSED	ACCOMPLISHED	NOT ACCOMPLISHED	COMMENTS
U. Wisconsin	o none	o individual instructors administer pre and post tests		
Moorpark	o modify current tests o test and interpret scores o assess pre-reading, English, and math skills	o pre and post-tests o special tests of mechanical skills		
Skyline	o conduct pretests o evaluate progress toward learning objectives	o tests of English and math skills at orientation o on the job assessment		o skill levels of students varied widely
Valencia (mfg.)	o assess training needs of 250 to 465 employees	o instructors administer pre and post tests o interests and needs survey of SC employees		o accomplished prior to COOP grant using $ from state grant
Valencia (film)	o review credentials of film employees o assess skills of non-film individuals	o pre and post tests	o 29 students received pre test only	o approximately 30% improvement in scores
Northampton	o none	o none		
Indiana Univ.	o none	o at discretion of individual instructor		o employer given option of worker assessment but none did it
Richland	o baseline and end-of-course survey	o 1 baseline survey and 3 end-of course surveys o course exams and grades		o 40% students rated course excellent o faculty pleased

F. Issues to be Addressed in the Second Year

These findings about project implementation raise issues that should be explored in the survey and case studies in Year 2 of the study. These issues are in addition to issues of partner role, innovation, and grant time frame, etc. already discussed.

Continuation after the Grant: The terms of the grant award required grantees to draft dissemination plans. Such plans imply that projects will live beyond the end of the Federal grants. Although some projects may not intend to continue, those that do (or that expect to) disseminate methods or products should be taking appropriate action. Five of the nine projects requested grant extensions (for a maximum of three months), usually to allow them to complete an evaluation or curriculum development.

The study team should look at whether poorly-designed or executed plans were revised after the end of the Federally funded project. For example, the Skyline project finally resolved scheduling problems with Toyota Motor Sales just as the Federal grant was ending. The project director noted that only at that point did he feel he had the freedom to deviate from the original Toyota approach.

Appropriateness of Customized Training: The study team should clarify if the intent of the Cooperative Demonstration Program is to train employees of individual employers. The Perkins Act specifically precludes awards to private companies. Even assuming that demonstrating employer-specific training is a Federal goal, what types of employers, or employees, should be priorities under the Cooperative Demonstration Program? Should employers be producers of high-tech products? Should the employees be those most in need of skill upgrading (or those most disadvantaged?) within those firms? "Customized training" is a de facto priority of the Program without any acknowledgement in regulations or grant rules.

Evaluation: The FY1988 projects visited by the study team were just beginning their evaluations at the time of the site visits. Few had planned for evaluation and infused evaluation activities into the

course of the grant. FY1989 grantees, on the other hand, received instructions in conducting evaluations at their first organizational meeting (when their grants began). The study team will explore whether the greater Federal emphasis on evaluation in FY1989 is reflected at the project level.

IV. PROJECT COSTS AND BENEFITS

The third question answered by the evaluation is whether project costs are "reasonable" in relation to the projected or actual outcomes of the project. Project costs are defined as the Cooperative Demonstration Program grant plus the non-Federal cash and/or in-kind matching contributions provided by the grantees. The outcomes of the project are defined as the numbers of students trained, the number of staff trained (if the project also focused on staff development), and the number of course hours developed (if the project also focused on curriculum development). The judgement of "reasonableness" is made by comparing costs and benefits across the projects rather than comparing them to some absolute standard.

While not yielding an absolute cost benefit ratio for each major outcome (as in traditional cost benefit analyses), these analyses quantify the major outcomes of the projects and, where possible, calculate the total costs incurred in achieving each of those outcomes. No attempt is made to assign a monetary value to the benefits resulting from the project outcomes (e.g., the dollar value of learning a new skill), but every effort is made to make appropriate comparisons between project treatment costs and outcomes.

This section is divided into four parts. Part A identifies the major cost and benefit issues to be addressed and the operational definition of those issues. Part B defines and enumerates the project costs, and Part C defines and enumerates the major project benefits. Part D then compares costs with benefits in accordance with the major issues raised in Part A. Finally, Part E briefly describes changes in the plan for the cost benefit analysis in Year 2.

A. Major Issues

Project costs and outcomes first are aggregated to overall cost estimates and benefit estimates. These are used to compute four measures:

- Treatment costs: total project costs minus planning and development costs;
- Project intensity: total treatment hours divided by the number of successful completions;
- Average unit cost of delivered services: total treatment cost divided by total units of service; and
- Service cost per unit of outcome: total treatment costs divided by the number of successful completions.

The definitions of treatment hours, successful completions, and units of service produced will vary according to the type of treatment (e.g., training versus curriculum development) implemented by the project. For projects that focus on student training, the number of treatment hours is the total number of classroom contact hours, the successful completions are those students finishing the class, and the units of service are the numbers of hours of training per student.

The analysis of the four major issues is based only on the FY1988 projects for which data were collected during the site visits. The eight FY1988 projects visited were selected according to their ranking in a preliminary assessment of evaluability. Because of the lack of data regarding project intensity (defined as treatment hours divided by successful completions), the study team could not select the sites for variations in treatment intensity as originally proposed. However, the team could collect limited cost and outcome data (e.g., project budgets and numbers of students trained) from all eight projects. These data

were collected through face-to-face interviews and reviews of budget and expenditure reports.

During three-day site visits, team members collected data from the project's records, the grantee's records, partner's records, and project staff interviews. Project records yielded all direct expenditures from the grant and from non-grant sources. The grantee's records documented all overhead expenditures or other funding sources within the organization. Partner organization members were interviewed to determine direct exenditures or in-kind contributions to the project. Finally, project staff were interviewed to identify other in-kind contributions to the project, such as donated equipment or release time from other organizations. Although in-kind contributions cannot be precisely translated into dollars, the analysis used general estimates of the value of the contribution stated in the grant application.

B. Project Costs

Project costs are the sum of all resources--either financial or non-financial--used for project activities. If a project uses only funds provided by the Federal grant, then project costs are equal to the grant amount. Cooperative Demonstration grants, however, require grantees to contribute at least 25 percent of the total project costs. Thus, project costs consist of both the Cooperative Demonstration grant amount and grantee match.

Project costs often include more that what is paid for from Federal funding and matching local resources. Projects may use existing instructional services paid by the grantee as part of its regular operations. Or projects may use the staff and materials funded by another, parallel grant to supplement the activities of the Cooperative Demonstration project. These outside sources of support for the project should be included in the calculations of total project costs in order to present an accurate picture of the project's true resources. Thus,

total project costs = Federal grant + local match + outside project resources.

Unfortunately, outside sources of support often cannot be included in the calculation of total project costs because they are not explicitly tracked by the grantee. Although the team was not able to account for all the costs of the project's activities, it is still possible to perform a limited assessment of the direct services and materials paid for with grant funds.

1. Cost Categories

The primary components of project costs used in the analysis are those found in the line item budgets of the projects. The line items include:

- Salaries and Wages;
- Fringe Benefits;
- Travel;
- Equipment;
- Supplies;
- Contractual Services;
- Other Costs;
- Total Direct Costs; and
- Indirect Costs.

These line items are explained in more detail in the following paragraphs.

Salaries and Wages. Primary staffing costs are salary and wages paid to staff, including annual salary and hourly wages for all employees of the grantee--or the partner organization--who work on the project. Among the staff included in the salaries and wages category are: teachers, instructors, administrators, other certified personnel, clerical staff, and support staff.

Fringe Benefits. Employees usually received fringe benefits as part of their compensation package including sick leave, annual leave, holidays, health insurance, etc. Fringe benefits are usually established by the institution as a percentage of total salaries and wages.

Travel. Travel costs, if any, are listed as a separate line item, including air or train fare, car rental, ground transportation, hotels, meals, and tips.

Equipment. All equipment purchased by a project is a separate category. Although the Program discouraged FY1988 grantees from using grants to purchase equipment and prohibited it in FY1989, some projects did purchase new equipment. Other projects may have used other non-Federal sources of funds to pay for project equipment. Among items

that might be purchased are specialized electronic equipment, manufacturing machinery, or computer hardware.

Supplies. Projects may require routine office supplies or may use specialized materials; these are a separate budget category. Among the types of supplies a project may use are office supplies and instructional materials.

Contractual Services. Projects may hire outside experts or additional temporary personnel. For example, projects may hire outside evaluators to evaluate the project and may use specialized services provided by other companies. These experts and services are paid through contracts that specify the work to be accomplished and the charges for that work. The rules governing the use of consultants (individuals) are different from those governing the use of companies (subcontracts), but both involve the external acquisition of services and are grouped in one category.

Other Direct Costs. Direct costs that do not fit into these categories are listed as "other costs" amd may include space rental, telephone, and postage if they are not paid for indirectly (see "indirect costs" below).

Total Direct Costs. The sum of all the direct cost categories yields the total direct costs of a project.

Indirect Costs. Indirect costs are charges to the project made by the grantee institution for overhead items such as office space, heat, electricity, postage, accounting services, and management services. The grantee institution usually provides these services and supplies to all projects and programs. To pay for items that are difficult to itemize, the grantee institution charges each project an indirect cost or overhead rate. The indirect cost is usually based on a percentage of the total salaries and fringe benefits, but may also include other direct costs as well. Under current grant regulations, grantees are allowed to charge a maximum indirect rate of eight percent.

Total Project Costs. Total project costs are the sum of all direct costs and all indirect costs associated with the project.

2. Sources of Funding

Projects fund activities from three major sources. First, projects use the grant funds provided by the Federal government through the Cooperative Demonstration Program grant award. Second, projects use local resources from public or private organizations (e.g., the grantee or partner organization) in a required 25 percent "local match." Program regulations require grantees to contribute a minimum of 25 percent of the total project costs. The contribution of the grantee can be composed of cash or in-kind resources from the grantee, the partner organization, another state or local program, or another Federal program. In-kind resources include grantee staff time, partner staff time, equipment, facilities, services, and materials.

Third, projects use funds or in-kind contributions not identified in the grant application nor reported in the project expenditure reports. These mostly are underlying instructional or support services provided by the grantee as part of the regular educational program. A second source are other projects operated by the grantee which are relevant to the Cooperative Demonstration project and which provide services, equipment, or other support contributing to the success of the funded project. The grantee may not identify these resources with the project because 1) the grantee already has satisfied the 25 percent match, 2) it would require additional grantee resources to track these contributions, 3) the grantee may need to use the "local match" in excess of the required 25 percent contribution to offset any matching funds disallowed in a subsequent Federal audit of the project, or 4) the additional resources are too difficult to handle in the accounting system. Although these other resources are not tracked in the grant, they are still part of the overall costs of the project and are relevant in determining the reasonableness of project costs.

The total costs of each project and sources of funding are presented in Table 16. Total project costs ranged from a low of $308,335 for Northampton Community College to a high of $759,842 for

Table 16

TOTAL PROJECT COSTS

PROJECT	FEDERAL GRANT FUNDS	LOCAL CASH MATCH	LOCAL IN-KIND MATCH	OTHER PROJECT RESOURCES	TOTAL PROJECT COSTS
U. Wisconsin	$388,770	$ 93,000	$ 48,749	$ 0	$530,519
Moorpark	299,564	69,696	77,889	0	447,149
Skyline	191,775	50,986	127,304	55,000	425,065
Valencia (mfg.)	222,456	130,034	71,860	0	424,350
Valencia (film)	406,317	52,065	117,617	0	575,999
Northampton	227,584	63,169	17,582	0	308,335
Indiana U.	213,040	68,523	154,000	0	435,563
Richland	322,267	10,575	427,000	0	759,842

* total project costs = Federal grant + local cash match + local in-kind match + other project resources.

Richland Public Schools. Only one project, Skyline Community College, received other grants which directly contributed to the Cooperative Demonstration project but which were not reported as part of the local match. The percent of total project costs contributed by the grantee ranged from a low of 26.1 percent by Northampton Community College to a high of 57.6 by Richland Public Schools. Thus, the district with the lowest total project costs also contributed the least while the district with the highest total project costs contributed the most local match.

C. Project Benefits

Project benefits are outcomes that improve the ability and/or employment status of students or the quality of the vocational education process. These outcomes can be expressed in either quantifiable terms (e.g., the number of students successfully completing training) or non-quantifiable terms (e.g., a new technique for skills identification). Although interesting, non-quantifiable outcomes are difficult to measure and to express in terms that would allow comparison with project costs. Consequently, the cost benefit analysis measures and assesses only quantifiable outcomes from the projects.

Quantifiable outcomes vary with the type of activity and the focus of the project. For example, the outcomes and benefits from curriculum development are likely to be new teaching modules or materials. Outcomes and benefits from a dissemination project are likely to be "how-to-do-it" descriptions of the project, formal publications and presentations, or greater awareness by other vocational education institutions. Similarly, the outcomes and benefits of training, with some student assessment, are the number of students with documented improvement in skill levels.

The Statement of Work (SOW) for this contract identified three quantifiable outcomes to be measured for each project: 1) the total number of service hours, 2) the number of successful participants, and 3) the number of person hours of services received. Because the primary purpose of the projects is to improve vocational education through improved student training, most services are student training. Therefore, primary outcome measures were: 1) the total number of hours of student training provided, 2) the number of students completing the training, and 3) the number of hours of training received by each student.

Other activities are also conducted under the grant, however, and these provide services as well. Their outcomes can be measured by refining the three general measures. For example, the outcomes of

projects emphasizing staff development can be expressed as: 1) the total number of hours of staff training provided, 2) the number of staff completing the training, 3) and the number of hours of training received by each staff member. Similar outcomes can be constructed for student assessment and the other activities. The following are the quantifiable outcomes, by type of activity, that are measured for each project in the cost benefit analysis:

Activity	Outcome
student assessment	number of students assessed
training students	number of students completing training
staff development	number of staff trained
curriculum development	number of course hours developed
skills identification	number of industry skills identified
dissemination/diffusion	number of other end users adopting product
partnerships/networking	dollar value of partner(s) contributions

The major outcomes from each type of activity were described in Section III and are summarized in Table 17.

Outcome measures do not measure all outcomes. Many important outcomes and benefits may not be measureable until after the 18 month grant period. For example, while the number of students hired is one measure of the quality of training, it may not be possible to collect this data if the students are years away from jobs or they were already employed. The demonstrated mastery of technical skills will be the ultimate measure of the effectiveness (along with job placement) of a new curriculum, but the project may not conduct pretests because no tests exist yet. Thus, the outcome measures may tell what was done, but not how well it was done.

Table 17

SUMMARY OF PROJECT BENEFITS

PROJECT	STUDENT ASSESSMENT	STUDENT TRAINING	STAFF DEVELOPMENT	CURRICULUM DEVELOPMENT	SKILLS IDENTIFIC.	DISSEMIN-ATION	PARTNERSHIP DEVELOPMENT
U. Wisconsin	o instructors admin. pre and post	o 450 students trained o 1,032 hours	o 50 teachers trained o 2000 hours	o 41 course modules	o surveyed 285 firms o 85 interv.	o newsletter o conference presentat.	o 16 second. & post-sec. agreements
Moorpark	o pre and post tests o skill tests	o 85 students trained o 23,936 hours	o 3 teachers trained o 360 hours	o modified existing curriculum	o estimates from 2 firms	o conference presentat.	o BLC o Ventura high schls.
Skyline	o Eng. and math tests o on-the-job	o 17 students trained o 40,500 hours	o 7 teachers trained o 200 hours	o developed new tests & labsheets	o worked with local dealers	o conference presentat.	o Toyota T-Ten prog. o 11 dealers
Valencia (mfg.)	o instructors admin. pre and post	o 392 students trained o 25,480 hours	o none	o developed some new materials	o none	o conference presentat. o st. comm.	o Stromberg-Carlson o contribut.
Valencia (film)	o pre and post tests	o 135 students trained o 13,500 hours	o none	o new curric-ulum in 5 areas	o none	o videotape o materials to ERIC	o Universal Studios o vendors
Northampton	o none	o 233 students trained o 20,136 hours	o seminar for SMT teachers	o 7 new courses o 4 upgraded	o done by company	o national teleconf. o marketing	o renewed relations w/ clients
Indiana U.	o at discre-tion of instructor	o 648 students trained o 12,960 hours	o none	o some modif. for COOP students	o surveyed 4000 firms o follow-ups	o conference presentat.	o 11 firms o local voc. schools
Richland	o baseline and end surveys	o 237 students trained o 42,660 hours	o 15 teachers trained o 2,400 hours	o formalized previous curriculum	o done by local adv. committee	o conference presentat. o 2 articles	o Battelle o 8 schools implement

D. Cost/Benefit Analyses

Ideally, the study would match costs to specific activities and outcomes so that it could determine cost effectiveness. However, it was not possible to collect cost data for all outcomes for two reasons. First, projects do not code their expenditures by activity and are not equipped to account for costs at that level of detail. Their internal accounting systems tend to reflect aggregate expenditures according to budget line items. Second, several activities may contribute to the same outcome or objective. The projects implemented a set of activities and often one activity is used to support more than one objective.

The analysis focused on only those activities for which cost data were available through the grantees accounting system or the final contract budget: planning and administration, student training, and curriculum development. Planning and administration costs include the wages of the project director and project clerical staff, associated fringe benefits, other direct costs associated with administration, and indirect costs. Student training costs include the wages of instructors and other specialists, associated fringe benefits, other direct costs (e.g., textbooks, supplies, travel, and stipends), and indirect costs. Curriculum development costs include the wages of instructors and curriculum development specialists, associated fringe benefits, other direct costs (e.g., training workshops, travel, and printing), and indirect costs.

1. Treatment Costs

The first major analysis separates planning costs from the costs of providing the service. The planning and administrative costs are defined as the sum of the wages of all administrative, clerical, and other non-instructional project personnel, plus any non-instructional direct costs. The planning and administrative costs subtracted from the total project costs to yield the total treatment costs:

$$\text{treatment costs} = (\text{total project costs}) - (\text{project director wages} + \text{clerical wages} + \text{fringe benefits} + \text{other direct costs} + \text{related indirect costs})$$

The treatment costs and planning/administration costs for each project are displayed in Table 18. The proportion of total project resources devoted to services instead of administration ranged from a low of 64.8 percent in Moorpark to a high of 97.6 percent in Richland. The administration costs for Richland appear artificially low because they do not include the cost of administration by partner schools.

2. Project Intensity

The second analysis determines the intensity of the project (i.e., the number of successful outcomes for each service relative to the effort expended to accomplish those outcomes) as:

$$\text{project intensity} = \frac{\text{total treatment hours}}{\text{number of successful completions}}$$

The effort to train students is the sum of the hours students spent in training across all courses. The number of successful outcomes is defined as the sum of the students completing the training. In projects where the treatment was staff training, the number of successful outcomes is the number of teachers completing the training. The project intensity for the two major activity groups for which data were available--training students and training staff--are displayed for each project in Table 19. The amount of training per student completer ranged from a low of 2.3 hours at the University of Wisconsin-Stout to a high of 1,280 hours at Skyline Community College. Staff training ranged from 30 hours per teacher to 160 hours per teacher.

3. Average Unit Cost of Services

The third analysis determines the average cost per unit of service. The total cost of the service is the sum of all costs

Table 18

PLANNING/ADMINISTRATION COSTS VERSUS TREATMENT COSTS

PROJECT	TOTAL PROJECT COSTS	PLANNING AND ADMIN. COSTS *	PERCENT	TREATMENT COSTS	PERCENT
U. Wisconsin	$530,519	$101,762	19.2	$428,757	80.8
Moorpark	447,149	157,185	35.2	289,964	64.8
Skyline	467,453	139,927	30.0	327,526	70.0
Valencia (mfg.)	424,350	100,185	23.6	324,165	76.4
Valencia (film)	575,999	70,276	12.2	505,723	87.8
Northampton	308,335	59,183	19.2	249,152	80.8
Indiana U.	435,563	104,691	24.0	330,872	76.0
Richland	759,842	18,353	2.4	741,489	97.6

* planning and administration costs = project director wages + clerical wages + fringe benefits + other direct costs + related indirect costs

Table 19

PROJECT INTENSITY

PROJECT	TOTAL HOURS STUDENT TRAINING	NUMBER OF STUDENTS COMPLETING	PROJECT INTENSITY*	TOTAL HOURS STAFF TRAINING	NUMBER OF STAFF COMPLETING	PROJECT INTENSITY
U. Wisconsin	1,032	450	2.3			
Moorpark	23,936	85	281.6	120	4	30.0
Skyline	21,760	17	1,280.0	200	2	100.0
Valencia [mfg.]	25,480	392	65.0			
Valencia [film]	102,060	135	756.0			
Northampton	174,724	233	749.9			
Indiana U.	12,960	418	31.0			
Richland	42,660	237	180.0	2400	15	160.0

* project intensity = $\frac{\text{total activity hours}}{\text{number of completers}}$

associated with the direct provision of the service, excluding project planning costs:

$$\text{average unit cost of service} = \frac{\text{total treatment cost}}{\text{total units of service provided.}}$$

For example, total service costs for providing student training would be the sum of the project costs for staff, materials, overhead, etc., for all the courses. The total service costs for curriculum development would be the sum of project costs for staff, testing, reproduction, overhead, etc. for all the courses produced. The total units of service provided is the sum of all students entering training or new courses.

The average unit costs for student training and curriculum development for each project are displayed in Tables 20. The average unit cost for student training ranged from a low of $0 at the University of Wisconsin-Stout (all training costs were born by the participating schools as part of their regular teaching responsibilities) to a high of $25.53 at Indiana University.

It should be noted that comparing the average cost per hour of training across projects may create an unfair comparison because of the variations in the intensity of the training and the number of students being trained. The average cost for an hour of training at Indiana University was the highest of the projects, but that project also trained the second highest number of students. To provide a more accurate comparison, the analysis should compute the average cost per hour of training per student trained. This can be operationally defined as:

$$\text{average unit cost of service per unit of outcome} = \frac{\text{total service costs}}{\frac{\text{total units of service provided}}{\text{number of completers}}}$$

Table 21 shows the per hour per student costs for the projects. The per hour per student costs range from a low of $0.00 for the

Table 20

AVERAGE UNIT COSTS OF TREATMENT

PROJECT	TOTAL HOURS OF STUDENT TRAINING	TOTAL COSTS FOR STUDENT TRAINING	COST PER HOUR OF TRAINING *	TOTAL HOURS OF CURRICULA DEVELOPED	TOTAL COSTS FOR CURRIC. DEVELOPMENT	COST PER COURSE HOUR
U. Wisconsin	1,032	$ 0	0.00	492	$428,558	$871.05
Moorpark	23,936	289,964	12.10			
Skyline	21,760	327,531	15.11			
Valencia (mfg.)	25,480	469,723	18.43			
Valencia (film)	102,060	317,577	3.11			
Northampton	174,724	107,271	0.61			
Indiana U.	12,960	330,872	25.53			
Richland	42,660	374,000	8.76	1,440	361,045	250.73

* average unit cost = $\frac{\text{total treatment costs}}{\text{total units produced}}$

Table 21

AVERAGE UNIT COSTS PER UNIT OF OUTCOME

PROJECT	TOTAL HOURS OF STUDENT TRAINING	TOTAL COSTS FOR STUDENT TRAINING	COST PER HOUR OF TRAINING	NUMBER OF COMPLETERS	COST PER HOUR PER STUDENT *
U. Wisconsin	1,032	$ 0	0.00	450	$ 0.000
Moorpark	23,936	289,964	12.10	85	0.142
Skyline	21,760	327,531	15.11	17	0.889
Valencia [mfg.]	25,480	469,723	18.43	392	0.047
Valencia [film]	102,060	317,577	3.11	135	0.023
Northampton	174,724	107,271	0.61	233	0.003
Indiana U.	12,960	330,872	25.53	418	0.061
Richland	42,660	374,000	8.76	237	0.037

* average unit cost of service per unit of outcome = $\frac{\text{total treatment cost}}{\frac{\text{total units of treatment provided}}{\text{number of completers}}}$

University of Wisconsin-Stout to a high of $.89 at Skyline Community College. The costs for the remainder of the projects tend to concentrate between $.01 and $.06 per hour. Skyline's costs are out of proportion with the other projects because so few students were hired into the program by the Toyota dealers and the program operated at level far lower than originally planned.

4. Service Cost per Unit of Outcome

The fourth analysis determines the service cost per unit of outcome. As in calculating average unit costs, the total service cost here is the sum of all costs associated with providing the service. Thus, service costs can be expressed as:

$$\text{service cost per unit of outcome} = \frac{\text{total service costs}}{\text{number of successful completions.}}$$

The number of successful completions is defined as the sum of the students or completing the training and courses successfully developed. The unit service costs for training students and curriculum development are displayed for each project in Table 22. Service costs ranged from a low of $0 at University of Wisconsin-Stout to $19,266 at Skyline Community College. Again, Skyline's costs are out of proportion with the other projects because the project trained fewer students than originally planned.

In summary, the answer to the question "are project costs reasonable in relation to project outcomes?" appears to be yes for all project except Skyline. The per unit and per outcome costs for all the other projects tended to cluster in the same area even though total costs and project intensity varied substantially. Skyline's costs, although understandably high, would suggest that the project was relatively unsuccessful as a model for other vocational education institutions.

Table 22

SERVICE COSTS PER UNIT OF TREATMENT

PROJECT	TOTAL COSTS FOR STUDENT TRAINING	NUMBER OF COMPLETERS	SERVICE COST PER STUDENT *	TOTAL COSTS FOR CURRICULA DEVELOPED	NUMBER OF COURSES DEVELOPED	COST PER COURSE
U. Wisconsin	$ 0	450	$ 0	$428,558	41	$ 10,453
Moorpark	289,964	85	3,411			
Skyline	327,531	17	19,266			
Valencia [mfg.]	469,723	392	1,198			
Valencia [film]	317,577	135	2,352			
Northampton	107,271	233	460			
Indiana U.	330,872	418	792			
Richland	374,000	237	1,578	361,045	8	45,130

* service costs = $\frac{\text{total treatment costs}}{\text{number of completers}}$

E. Plans for Year 2

The nine projects to be used in the cost benefit evaluation in Year 2 of this study will be selected from among the 15 FY1989 projects ranked highest in the evaluability assessment. The 15 projects will be further ranked according to the intensity of treatment (i.e., total treatment hours per completer). Three projects representing high intensity treatments, three projects representing medium intensity treatments, and three projects representing low intensity treatments will be selected. The nine sites will be visited to collect the necessary cost and outcome data. Cost and outcome data also will be collected from the other six projects visited. As with the FY1988 projects, conclusions about the FY1989 project will be generalized only to those projects for whom data was collected and not to the universe of 30 FY1989 projects.

In Year 2 of the study, cost and outcome data will be collected using field protocols similar to those used in Year 1. Cost and outcome data also will be collected through a review of project progress reports and during the mail survey of all Year 2 projects.

V. CONCLUSIONS AND RECOMMENDATIONS FROM THE FIRST YEAR

A. Summary of Findings

Section I of this report identified three evaluation questions to be answered by the study. First, do the grant applications present a clear and coherent design for a project? Second, were the grantees able to implement their project designs as proposed, and, if not, what problems prevented that implementation? Third, are project costs reasonable in relation to projected or actual outcomes? Each question was the subject of a separate section of this report. This part summarizes these findings and presents the answers to the three questions.

1. Do the grant applications submitted for funding present a clear and coherent design for a project?

The terms "clear" and "coherent" were operationally defined to mean "logical" and "plausible" respectively. When taking both factors into account, three projects were predicted to be successful demonstrations; ten projects were predicted to be potentially successful; and ten projects were unlikely to be successful. Thus, 13 out of the 23 applications presented clear and coherent design for their project. Among the eight projects selected for site visits, the final rankings were:

Grantee	Project Logic	Project Plausibility	Predicted Success
Valencia Community College [mfg.]	high	high	successful
Moorpark College	high	high	successful
Richland Public Schools	high	medium	successful
Skyline Community College	medium	medium	somewhat
Valencia Community College [film]	medium	medium	somewhat
Indiana University	medium	low	less likely
Northampton Community College	low	high	less likely
University of Wisconsin - Stout	low	low	less likely

The predicted success of the project based on the application's clarity and coherence can be compared with the actual success of the project based on the numbers of students trained. Among the three projects most likely to succeed, two projects (Valencia [mfg.] and Richland) fell short of their targeted number of students to be trained. Among the two projects (Skyline and Valencia [film]) somewhat likely to succeed, both projects met their training target, although Skyline had a much lower participation rate that initially expected. Among the three projects less likely to succeed, two projects (University of Wisconsin-Stout and Northampton) fell short of their targeted number of students to be trained. It appears that the clarity and coherence of the application is not a good predictor of the likely success of the training component of the project. Other aspects of the project, e.g., long term impacts on the labor market or numbers of students getting jobs because of the training could not be evaluated within the time-frame of the current study. Therefore, the usefulness of application clarity and coherence as predictors of long term success is still unknown.

2. Were grantees able to implement their project designs as proposed?

The success in implementation was measured by the extent to which the project met its goals and objectives regarding student training, partnership development, and curriculum development. Among the eight projects visited, the outcomes were accomplished as planned at those projects designated with a "yes":

Grantee	Student Training	Partner-ship Devel.	Curriculum Develop-ment
Valencia Community College [mfg.]	yes	yes	n/a
Moorpark College	yes	no	n/a
Richland Public Schools	yes	yes	yes
Skyline Community College	no	no	n/a
Valencia Community College [film]	yes	yes	n/a
Indiana University	no	no	n/a
Northampton Community College	yes	yes	n/a
University of Wisconsin - Stout	yes	yes	yes

Thus, five of the eight projects were able to implement their proposed plan.

3. Are project costs reasonable in relation to project outcomes?

The answer appears to be yes for seven of the eight projects (the exception is Skyline). The per unit and per outcome costs for all the other projects tended to cluster in the same area even though total costs and project intensity varied substantially. Skyline's costs, although understandably high, would suggest that the project was relatively unsuccessful as a model for other vocational education institutions.

The proportion of total project resources devoted to project planning and administration ranged from a low of 2.4 percent in Richland Public Schools to a high of 35.2 percent. The costs for Richland appear artificially low because it does not include the cost of administration by partner schools.

The second cost issue was the intensity of the project (i.e., the number of successful outcomes for each type of treatment relative to the effort expended to accomplish those outcomes). The amount of training per student completer ranged from 2.3 hours at the U. of Wisconsin to 1,280 hours at Skyline Community College. Staff training ranged from 30 hours to 160 hours per teacher.

The third cost issue was the average cost per unit of treatment. The total cost of the treatment is the sum of all costs associated with the direct provision of the treatment (i.e., excluding project planning costs). The average unit cost for student training ranged from $0 at Wisconsin (all training costs were born by the participating schools as part of their regular teaching responsibilities) to $25.53 at Indiana University. However, comparing average cost per hour of training across projects may be unfair because of the variations in the intensity of the training and the number of students trained. To provide a more accurate comparison, the analysis should compute the average cost per hour of training per student trained. The per hour per student costs range from a low of $0.00 for the University of

Wisconsin to $.89 at Skyline Community College, other projects grouped between $.01 and $.06 per hour. Skyline's costs are high because so few students were hired into the program by the Toyota dealers and the program operated at level far lower than originally planned.

The fourth cost issue was the service cost per unit of outcome. As in calculating average unit costs, the total treatment cost here is the sum of all costs associated with providing the treatment. Service costs ranged from a low of $0 at University of Wisconsin to $19,266 at Skyline Community College. Again, Skyline's costs are out of proportion with the other projects because the project trained fewer students than originally planned.

B. Recommended Changes in the Study Design for the Second Year

Based on the findings and experiences of the first year of the study, the study team recommends that the grantees to be site visited be selected based on the type of partnership and numbers of disadvantaged students served rather than on the evaluability of their application or the intensity of their services. The study team will use a four step process for selecting these sites. First, the 30 FY1989 projects will be categorized according to the type of partnership implemented. The types may include: 1) partner as customer; 2) partner as advisory committee; 3) partner as supplier of resources such as equipment or job placements; 4) partner in sharing the delivery of instruction and services; or 5) partner as a developer seeking assistance. The study team will categorize the projects based on information from the mail survey rather than information contained in the original grant application. Several grantees admitted to the study team that they had not put much effort into preparing their application and were "surprised" to have been awarded grants. Thus, applications may reflect the applicant's perception of their chance to win rather than their true potential to conduct a successful demonstration. Furthermore, the quality of the grant application may also be a function of the grantees grant application writer rather than the capabilities of the grantee staff to manage a project. The sites to be visited would be selected after the mail survey has been completed.

Second, the projects will be ranked by the six members of the advisory panel according to the degree of innovation in the partnership arrangement. Projects showing the greatest amount of innovation relative to other projects known to the panel members would be ranked highest. The projects will be ranked using information from the mail survey and from the grant application.

Third, the three most innovative types of partnerships within each of the five partnerships categories will be selected for site visits. If there are more than three projects equally ranked at the top of the

category, three projects will be selected to represent three secondary types of innovation: innovation in curriculum, innovation in training techniques, or innovation in technology.

Fourth, the remaining four sites will be selected based solely on the number of special population students being served. The 30 projects will be ranked according to the total number of special population students trained and/or placed into jobs, and the top four projects will receive site visits.